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The PHOTOFACT Servicer

Vol. 7, Nos. 69 & 70 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ September 15, 1949

REGISTRATION LISTS

of

RMA PRODUCTION SOURCE CODE

Code symbols assigned to radio manufacturers and suppliers, arranged both alphabetically by companies and numerically by code numbers.

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RADIO MANUFACTURERS ASSOCIATION
1317 F Street, N. W.
Washington 4, D. C.

HOWARD W. SAMS & CO., INC.

(C)

RMA PRODUCTION SOURCE CODE SYMBOLS

Code Symbols Assigned to Radio Manufacturers and Suppliers, Arranged both Alphabetically by Companies and Numerically by Code Numbers

ALPHABETICAL LIST

The following list represents revised listing through January 1, 1949

(*Indicates non-members)

Company	Code Number
*Acme Electric Corporation, Cuba, N. Y.	413
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*Admiral Corporation, Chicago 47, Ill.	101
Aerovox Corporation, New Bedford, Mass.	102
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American Television & Radio Co., St. Paul 1, Minn.	551
American Transformer Company, Newark 5, N. J.	350
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Amperex Electronic Corporation, Brooklyn 1, N. Y.	111
Amy, Aceves & King, Inc., New York 18, N. Y.	112
*Anaconda Wire & Cable Company, Hastings-On-Hudson 6, N. Y.	547
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*Bachmann Bros. Inc., Philadelphia 24, Pa.	378
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190	The General Industries Company, Elyria, Ohio
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194	General Radio Company, Cambridge 39, Mass.
196	Gits Molding Corporation, Chicago 44, Ill.
198	Edwin I. Guthman & Co., Inc., Chicago 7, Ill.
199	The Hallicrafters Co., Chicago 24, Ill.
200	Olympic Radio & Television, Inc., Long Island City 1, N. Y.
203	Harvey-Wells Electronics Inc., Southbridge, Mass.
204	Hawley Products Company, St. Charles, Ill.
205	Haydu Brothers, Plainfield, N. J.
206	Hewlett-Packard Company, Palo Alto, Calif.
207	Hoffman Radio Corp., Los Angeles 7, Calif.
208	Howard Radio Company, Chicago 13, Ill.
209	Hudson American Corp., New York 18, N. Y.
210	Hytron Radio & Electronics Corp., Salem, Mass.
211	The Indiana Steel Products Co., Chicago 2, Ill.
214	International Resistance Co., Philadelphia 8, Pa.
215	Irvington Varnish & Insulator Co., Irvington 11, N. J.
216	The Jackson Electrical Instrument Co., Dayton 1, Ohio
217	Jackson Industries, Inc., Chicago 16, Ill.
218	Jefferson Electric Company, Bellwood, Ill.

219 Jefferson-Travis Inc., (Emerson Radio & Phonograph), New York 11, N. Y.
220 Jensen Manufacturing Co., Chicago 38, Ill.
221 J. F. D. Manufacturing Co., Inc., Brooklyn 19, N. Y.
222 E. F. Johnson Company, Waseca, Minn.
223 Kerrigan Lewis Mfg. Co., Chicago 51, Ill.
224 Kester Solder Company, Chicago 39, Ill.
225 King Laboratories, Inc., Syracuse 4, N. Y.
228 Lenz Electric Mfg. Co., Chicago 47, Ill.
229 Kimble Glass Div., Owens-Illinois Glass Co., Toledo 1, Ohio
230 Littlefuse, Incorporated, Chicago 40, Ill.
231 Machlett Laboratories, Inc., Springdale, Conn.
232 The Magnavox Company, Fort Wayne 4, Ind.
235 P. R. Mallory & Co., Inc., Indianapolis 6, Ind.
236 Measurements Corporation, Boonton, N. J.
237 John Meck Industries, Inc., Plymouth, Ind.
238 Meissner Mfg. Div., Maguire Industries, Inc., Mt. Carmel, Ill.
239 Merit Coil and Transformer Corp., Chicago 40, Ill.
240 Micamold Radio Corp., Brooklyn 6, N. Y.
242 James Millen Mfg. Co., Inc., Malden 48, Mass.
244 The Muter Company, Chicago 5, Ill.
245 National Company, Inc., Malden 48, Mass.
246 National Fabricated Products, Inc., Chicago 47, Ill.
247 National Union Radio Corp., Orange, N. J.
248 Noblitt-Sparks Industries, Inc., Columbus, Ind.
249 Oak Mfg. Co., Chicago 10, Ill.
250 The Ohio Carbon Company, Cleveland 11, Ohio
251 Ohmite Manufacturing Company, Chicago 44, Ill.
252 Operadio Manufacturing Co., St. Charles, Ill.
254 Packard-Bell Company, Los Angeles 5, Calif.
257 Parisian Novelty Company, Chicago 9, Ill.
258 Permoflux Corporation, Chicago 39, Ill.
259 Permo, Incorporated, Chicago 26, Ill.
260 Philco Corporation, Philadelphia 34, Pa.
261 *Philharmonic Radio Corp., New York 19, N. Y.
262 Philmore Mfg. Co., Inc., New York 3, N. Y.
264 Pilot Radio Corporation, Long Island City 1, N. Y.
265 Poray Inc., Chicago 51, Ill.
267 Premax Products Div., Chisholm-Ryder Co., Inc., Niagara Falls, N. Y.
269 Quality Hardware and Machine Div., Continental-United Industries Co., Inc., Chicago 26, Ill.
270 Quam-Nichols Company, Chicago 16, Ill.
273 Radio Condenser Company, Camden 4, N. J.
274 RCA Victor Division, Radio Corp. of America, Camden, N. J.
275 The Radio Craftsmen, Inc., Chicago 5, Ill.
276 Radio Eng. Labs, Inc., Long Island City 1, N. Y.
277 Radio Speakers, Inc. (Emerson Radio and Phonograph Corp.) Chicago 16, Ill.
278 Brunswick Radio, Div. of Radio & Television, Inc., New York 16, N. Y.
280 Raytheon Manufacturing Co., Newton 58, Mass.
281 Rea Magnet Wire Co., Inc., Fort Wayne 4, Ind.
282 Rek-O-Kut Company, Long Island City 1, N. Y.
283 Remington Rand, Inc., South Norwalk, Conn.
284 Remler Company, Ltd., San Francisco 10, Calif.
285 The Rola Company, Inc. (The Muter Company), Cleveland 14, Ohio
286 The Ross Manufacturing Company, Chicago 16, Ill.
287 Walter L. Schott Company, Beverly Hills, Calif.
289 J. P. Seeburg Corporation, Chicago 22, Ill.
291 Sentinel Radio Corporation, Evanston, Ill.
293 Sherron Electronics Co., Div. of Sherron Metallic Corp., Brooklyn 6, N. Y.
294 The F. W. Sickles Co., Sub. of General Instrument Corp., Chicopee, Mass.
295 Mark Simpson Manufacturing Co., Inc., Long Island City 3, N. Y.
296 Solar Manufacturing Corp., North Bergen, N. J.
297 Sonora Radio & Television Corp., Chicago 12, Ill.
298 Sound, Inc., Chicago 16, Ill.
299 The Sparks-Withington Company, Jackson, Mich.
300 Speer Resistor Corporation, Saint Marys, Pa.
301 Sperry Gyroscope Co., Div. of The Sperry Corp., Great Neck, Long Island, N. Y.
303 Sprague Electric Company, North Adams, Mass.
304 Stackpole Carbon Company, St. Marys 3, Pa.
305 *Standard Coil Products Co., Inc., Chicago 39, Ill.
306 Standard Transformer Corp., Chicago 18, Ill.
307 Stewart-Warner Corporation, Chicago 14, Ill.
308 Stromberg-Carlson Company, Rochester 3, N. Y.
309 Stupakoff Ceramic & Mfg. Co., Latrobe, Pa.
310 Superior Tube Company, Norristown, Pa.
311 Supreme, Incorporated, Greenwood, Miss.
312 Sylvania Electric Products Inc., Emporium, Pa.
313 Synthane Corporation, Oaks, Pa.
314 Syracuse Ornamental Co., Inc., Syracuse 2, N. Y.
317 Templetone Radio Mfg. Corp., New London, Conn.
318 *Thomas & Skinner Steel Products Co., Indianapolis 5, Ind.
320 Trav-Ler Radio Corporation, Chicago 6, Ill.
321 The Triplett Electrical Inst. Co., Bluffton, Ohio
322 Tung-Sol Lamp Works, Inc., Newark 4, N. J.
323 United Electronics Company, Newark 2, N. J.
325 United States Television Mfg. Corp., New York 23, N. Y.
330 Wm. T. Wallace Mfg. Co., Peru, Ind.
331 The Ward Products Corp., Division of the Gabriel Co., Cleveland 3, Ohio
334 Wells-Gardner & Co., Chicago 39, Ill.
335 Wm. H. Welsh Co., Inc., Chicago 16, Ill.
336 Western Electric Co., Inc., New York 5, N. Y.
337 Westinghouse Electric Corp., Baltimore 3, Md.
338 Weston Electrical Instrument Corporation, Newark 5, N. J.
339 *Wilcox Electric Co., Inc., Kansas City 1, Mo.
340 Wilcox-Gay Corporation, Charlotte, Mich.
342 *The Zell Company, New York 12, N. Y.
343 Zenith Radio Corporation, Chicago 39, Ill.
345 The Astatic Corporation, Conneaut, Ohio
347 Tele-Tone Radio Corp., New York 19, N. Y.
350 American Transformer Co., Newark 5, N. J.
351 Symphonic Radio and Electronic Corp., Cambridge 42, Mass.
352 *Magnetic Windings Company, Easton, Pa.
357 *Teleradio Engineering Corp., Wilkes Barre, Pa.
359 Webster Electric Company, Racine, Wis.
360 *Gavitt Mfg. Co., Inc., Brookfield, Mass.
366 New York Transformer Co., Inc., Alpha, N. J.
367 National Moldite Company, Hillside 5, N. J.
368 *Santay Corporation, Chicago 24, Ill.
369 *Stoddart Aircraft Radio Co., Hollywood 38, Calif.
370 *United-Carr Fastener Corp., Cambridge 42, Mass.
371 *Best Mfg. Co., Inc., Irvington 11, N. J.
372 *Holyoke Wire and Cable Corp., Holyoke, Mass.
374 *Harry A. Prock Cabinet Co., Glenside, Pa.
375 *Webster-Chicago Corporation, Chicago 39, Ill.
376 Hazeltine Electronics Corp., New York 19, N. Y.
378 *Bachmann Bros. Inc., Philadelphia 24, Pa.
379 *United Wood Specialty Mfg. Co., Fall River, Mass.
381 *The Ucinite Company, Newtonville, Mass.
384 *Red Lion Cabinet Company, Red Lion, Pa.
385 *Dearborn Glass Company, Chicago 8, Ill.
390 *Printloid, Inc., New York 12, N. Y.
391 Altec Lansing Corporation, Hollywood 38, Calif.
392 *The Wheeler Insulated Wire Company, Inc., Bridgeport 4, Conn.
394 *Foster Transformer Company, Cincinnati 23, Ohio
395 *Permoflux Corporation, Glendale 5, Calif.
396 General Cement Mfg. Co., Rockford, Ill.
397 The Workshop Associates Incorporated, Newton Highlands 61, Mass.

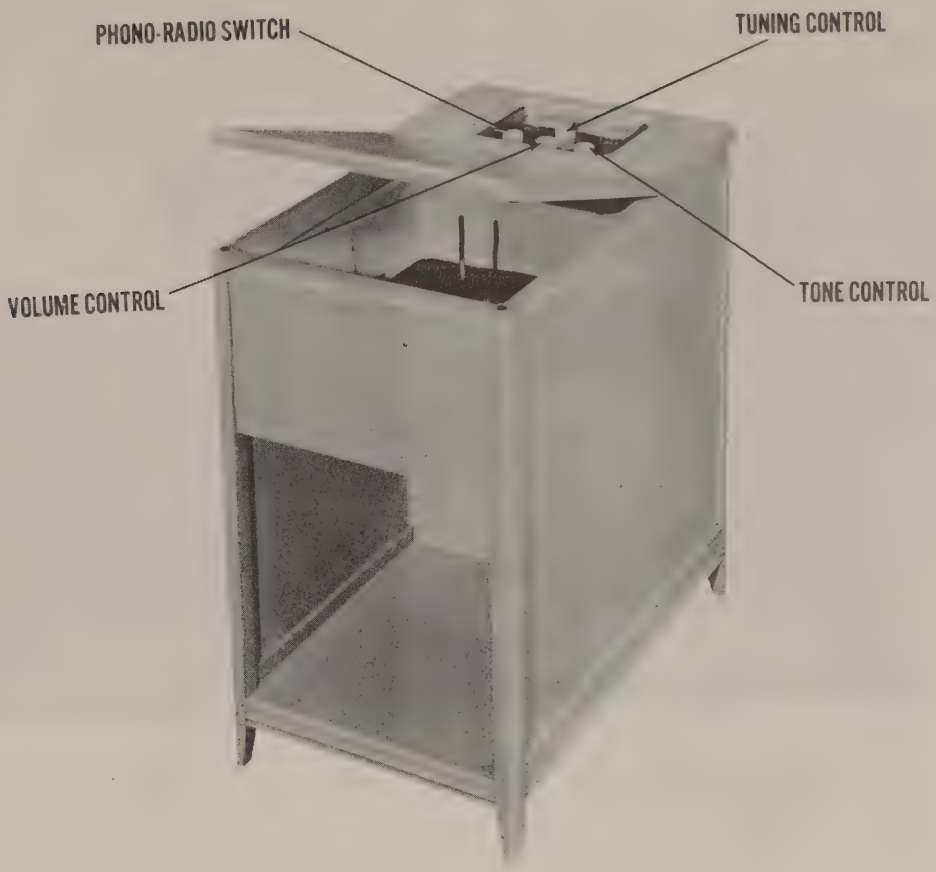
402 Andrew Corporation, Chicago 19, Ill.
403 Super Electric Products Corp., Jersey City 7, N. J.
406 Wirt Company, Philadelphia 44, Pa.
409 British Industries Corp., New York 7, N. Y.
411 Hardwick, Hindle, Inc., Newark 5, N. J.
412 *General Transformer Corp., Chicago 7, Ill.
413 *Acme Electric Corporation, Cuba, N. Y.
415 United Mfg. & Service Co., Milwaukee 4, Wis.
418 *United Transformer Corp., New York, N. Y.
423 *North American Philips Co., Inc., Dobbs Ferry, N. Y.
424 *Milwaukee Stamping Co., Milwaukee 14, Wis.
425 *Essex Electronics, Berkeley Heights, N. J.
426 E. W. McGrade Manufacturing Company, Inc., Marysville, Kan.
427 Communication Measurements Laboratory, New York 6, N. Y.
428 *Schulmerich Electronics, Inc., Sellersville, Pa.
430 Camburn, Inc., Woodside, Long Island, N. Y.
431 Waterman Products Co., Inc., Philadelphia, Pa.
433 Cleveland Electronics, Inc., Cleveland 3, Ohio
435 Plastoid Corporation, Long Island City 1, N. Y.
436 Adaptol Company, Brooklyn 13, N. Y.
438 The Gudeman Company, Chicago 10, Ill.
439 Collins Radio Company, Cedar Rapids, Iowa
440 Cannon Electric Development Company, Los Angeles 31, Calif.
442 J-B-T Instruments, Inc., New Haven 8, Conn.
444 A. F. Smuckler & Co., New York 10, N. Y.
445 *Mississippi Products, Inc., Jackson, Miss.
446 Good-All Electric Mfg. Co., Ogallala, Nebr.
447 Radionic Controls, Inc., Chicago 18, Ill.
448 *Radiomarine Corporation of America, New York 13, N. Y.
449 Wilder Manufacturing Corp., Chicago 47, Ill.
450 Columbus Process Co., Inc., Columbus, Ind.
452 Empire Coil Co., Inc., New Rochelle, N. Y.
453 Russell Electric Co. (Raytheon Manufacturing Company), Chicago 10, Ill.
454 Telequip Radio Company, Chicago 8, Ill.
455 Dynavox Corporation, Long Island City 1, N. Y.
456 Fisher Radio Corporation, New York 17, N. Y.
457 Herlec Corporation, Milwaukee 3, Wis.
458 General Aniline & Film Corporation, New York 22, N. Y.
460 Dual Engineering Corporation, Chicago 22, Ill.
461 Barker & Williamson, Upper Darby, Pa.
462 Communications Co., Inc., Coral Gables 34, Fla.
463 Testing Instruments, Inc., Dayton 2, Ohio
464 *Q. L. C. Corporation, Summit, N. J.
465 Oxford Electric Corporation, Chicago 15, Ill.
466 Delco Radio Division, General Motors Corp., Kokomo, Ind.
467 Grigsby-Allison Co., Inc., Arlington Heights, Ill.
468 *Cinaudagraph Speakers, Division of Aireon Manufacturing Corp., Kansas City 15, Kan.
473 Tartak Speakers, Inc., Los Angeles 23, Calif.
474 Special Products Company, Silver Spring, Md.
475 *Glass Products Company, Chicago 2, Ill.
479 The National Varnished Products Corp., Woodbridge, N. J.
481 Harnett Electric Corp., Port Washington, N. Y.
482 Rada Products Co., Chicago 12, Ill.
483 *Houston Radio & Television Co., Houston, Tex.
484 *Shurite Meters, New Haven 8, Conn.
485 Scott Radio Laboratories, Inc., Chicago 40, Ill.
486 Lectrovision, Inc., New Rochelle, N. Y.
489 Radio Television, Products Corporation, Grass Lake, Mich.
493 Dormitzer Electric & Mfg. Corp., Boston 15, Mass.
494 Fidelity Products Co., Inc., So. Orange, N. J.
498 *Radio Mfg. Engineers, Inc., Peoria 6, Ill.
499 *Speaker Corporation of Chicago, Chicago 22, Ill.
501 Standard Piezo Company, Carlisle, Pa.
502 American Radio Hardware Co., Inc., Mt. Vernon, N. Y.
503 Brook Electronics, Inc., Elizabeth 2, N. J.
504 The James Knights Company, Sandwich, Ill.
505 Precision Apparatus Co., Inc., Elmhurst, L. I., N. Y.
506 *Micarta Fabricators, Inc., Chicago 40, Ill.
507 John Volkert Metal Stampings, Inc., Brooklyn 5, N. Y.
508 The Hickok Electrical Inst. Co., Cleveland, Ohio
511 *The Joyner Corporation, Chicago 44, Ill.
512 Electronic Associates, Inc., Long Branch, N. J.
515 Electronic Components Corp., Chicago 10, Ill.
516 United Condenser Corp., New York 54, N. Y.
517 Audak Company, Inc., New York 18, N. Y.
519 American Volume Control Corporation, New York 6, N. Y.
520 Schneider & Marguard, Inc., Brooklyn 17, N. Y.
523 Transmitter Equipment Mfg. Co., Inc., New York 14, N. Y.
524 Triwec Transformer Company, Chicago 18, Ill.
525 Crucible Steel Co. of America, New York 17, N.Y.
527 Valpey Crystal Corporation, Holliston, Mass.
528 Columbus Electronics Corp., Yonkers, N. Y.
529 Wheeler Laboratories, Inc., Great Neck, N. Y.
530 Clippard Instrument Laboratory, Inc., Cincinnati 14, Ohio
532 *Ward Leonard Electric Co., Mount Vernon, N. Y.
535 Hedco Manufacturing Corp., Bronx 67, N. Y.
536 Tel-Instrument Co., Inc., East Rutherford, N. J.
537 Roger M. Wise, Inc., Rockville Center, L. I., N. Y.
538 Pyroferric Company, New York 67, N. Y.
539 Powdered Metal Products Corp. of America, Franklin Park, Ill.
540 *Radio Industries, Inc., Chicago 18, Ill.
541 Industrial Television, Inc., Clifton, N. J.
543 The Nielsen Television Corp., Norwalk, Conn.
544 Stephens Mfg. Corp., Culver City, Calif.
545 Electronic Enterprises, Inc., Newark 4, N. J.
547 *Anaconda Wire & Cable Company, Hastings-On-Hudson 6, N. Y.
548 *B. J. Toegel, Inc., Elizabeth, N. J.
549 *Mid-West Coil & Transformer Co., Chicago 14, Ill.
550 *Standard Winding Co., Newburgh, N. Y.
551 American Television & Radio Co., St. Paul 1, Minn.
552 Otis Radio & Electric Corp., Hawarden, Iowa
553 *Wesco Electric Company, Inc., Chicago 30, Ill.
554 American Phenolic Corporation, Chicago 50,. Ill.
555 *Walden Electronics, Inc., Chicago 10, Ill.
557 Electronic Products Co., Mt. Vernon, N. Y.
558 Eagle Electronics, Inc., New York 13, N. Y.
559 Lyman Electronic Corp., Springfield 4, Mass.
560 Stark Sound Engineering Corporation, Fort Wayne, Ind.
562 Polarad Electronics Co., New York 7, N. Y.
563 J. W. Davis and Company, Dallas 5, Texas
565 Electrovox Company, Inc., East Orange, N. J.
566 Television Projects, Inc., Newark 2, N. J.
569 *Electrical Utilities Company, La Salle, Ill.
570 *Leonard Electric Products Co., Inc., Brooklyn 19, N. Y.
571 *General Cable Corp., New York 17, N. Y.
572 *F. & V. Coil Winding Corp., Newark 2, N. J.
573 Alcon Metal Products, Inc., Chicago 39, Ill.
574 *Stanwyck Winding Co., Newburgh, N. Y.
575 *Heppner Manufacturing Co., Chicago 25, Ill.
576 Ellar Woodcraft Corp., New York 1, N. Y.
577 The La Pointe Plascomold Corporation, Unionville, Conn.
578 The International Electronics Company, Philadelphia 30, Pa.

579	Belden Manufacturing Company, Chicago 44, Ill.
580	Rowe Industries, Toledo 9, Ohio
581	Aircraft-Marine Products Inc., Harrisburg, Pa.
582	General Precision Equipment Corporation, New York 7, N. Y.
583	Tele King Corporation, New York 1, N. Y.
584	W. M. C. Inc., Chicago 47, Ill.
585	*American Insulator Corporation, New Freedom, Pa.
586	Drake Manufacturing Company, Chicago 22, Ill.
587	Radio Specialty Manufacturing Company, Portland 14, Ore.
588	Barnes Metal Products Co., Chicago 23, Ill.
589	David Bogen Co., Inc., New York 12, N. Y.
590	Shure Brothers, Incorporated, Chicago 10, Ill.
591	Crown Capacitor Corporation, Wrentham, Mass.
592	Perfection Electric Company, Chicago 5, Ill.
593	Kip Electronics Corporation, New York 14, N. Y.
594	Kobzy Tool Company, Chicago 22, Ill.
596	*The Cramer Company, Chicago 39, Ill.
597	Stevens Wire Insulating Co., Chicago 45, Ill.
598	*DeLuxe Coils, Inc., Wabash, Ind.
599	*Electro-Connector Corp., Philadelphia 22, Pa.
600	Ansley Radio & Tel., Inc., Trenton 9, N. J.
601	Engineering Services, Inc., Evansville 8, Ind.
602	*Eastern Transformer Company, Inc., New York 11, N. Y.
603	*Eltran Corp., St. Anne, Ill.
604	Staver Mfg. Co., Brooklyn 2, N. Y.
605	Stanley Spring Mfg. Co., Chicago 12, Ill.
606	Woodward-Schumacher Electric Corporation, Chicago 22, Ill.
607	Consolidated Wire and Associated Companies, Chicago 16, Ill.
608	*TELvision Laboratories, Inc., Chicago 44, Ill.
609	Markel Electric Products, Inc., Buffalo 3, N. Y.
610	Carter Parts Company, Chicago 10, Ill.
611	Holiday Specialties, Inc., New York 12, N. Y.
612	Radio Merchandise Sales, Inc., New York 55, N. Y.
613	Star Products Company, Chicago 10, Ill.
614	Simpson Electric Company, Chicago 44, Ill.
615	Reynolds Metals Company, Louisville, Ky.
616	Illinois Condenser Co., Chicago 22, Ill.
617	RAM Electronics, Inc., Paterson, N. J.
618	*Anco Electric Corporation, Paterson, N. J.
619	Bowers Battery and Spark Plug Co., Reading, Pa.
620	Kay Electric Company, Pine Brook, N. J.
621	*Zenith Optical Company, Huntington 19, W. Va.

RMA DATE CODE

Symbol of Each Week in Period of -

Code	January 1, 1949 to December 31, 1949			Code	January 1, 1950 to December 31, 1950		
	Period				Period		
01	Jan. 2	to Jan. 8	incl.	01	Jan. 1	to Jan. 7	incl.
02	Jan. 9	to Jan. 15	"	02	Jan. 8	to Jan. 14	"
03	Jan. 16	to Jan. 22	"	03	Jan. 15	to Jan. 21	"
04	Jan. 23	to Jan. 29	"	04	Jan. 22	to Jan. 28	"
05	Jan. 30	to Feb. 5	"	05	Jan. 29	to Feb. 4	"
06	Feb. 6	to Feb. 12	"	06	Feb. 5	to Feb. 11	"
07	Feb. 13	to Feb. 19	"	07	Feb. 12	to Feb. 18	"
08	Feb. 20	to Feb. 26	"	08	Feb. 19	to Feb. 25	"
09	Feb. 27	to Mar. 5	"	09	Feb. 26	to Mar. 4	"
10	Mar. 6	to Mar. 12	"	10	Mar. 5	to Mar. 11	"
11	Mar. 13	to Mar. 19	"	11	Mar. 12	to Mar. 18	"
12	Mar. 20	to Mar. 26	"	12	Mar. 19	to Mar. 25	"
13	Mar. 27	to Apr. 2	"	13	Mar. 26	to Apr. 1	"
14	Apr. 3	to Apr. 9	"	14	Apr. 2	to Apr. 8	"
15	Apr. 10	to Apr. 16	"	15	Apr. 9	to Apr. 15	"
16	Apr. 17	to Apr. 23	"	16	Apr. 16	to Apr. 22	"
17	Apr. 24	to Apr. 30	"	17	Apr. 23	to Apr. 29	"
18	May 1	to May 7	"	18	Apr. 30	to May 6	"
19	May 8	to May 14	"	19	May 7	to May 13	"
20	May 15	to May 21	"	20	May 14	to May 20	"
21	May 22	to May 28	"	21	May 21	to May 27	"
22	May 29	to June 4	"	22	May 28	to June 3	"
23	June 5	to June 11	"	23	June 4	to June 10	"
24	June 12	to June 18	"	24	June 11	to June 17	"
25	June 19	to June 25	"	25	June 18	to June 24	"
26	June 26	to July 2	"	26	June 25	to July 1	"
27	July 3	to July 9	"	27	July 2	to July 8	"
28	July 10	to July 16	"	28	July 9	to July 15	"
29	July 17	to July 23	"	29	July 16	to July 22	"
30	July 24	to July 30	"	30	July 23	to July 29	"
31	July 31	to Aug. 6	"	31	July 30	to Aug. 5	"
32	Aug. 7	to Aug. 13	"	32	Aug. 6	to Aug. 12	"
33	Aug. 14	to Aug. 20	"	33	Aug. 13	to Aug. 19	"
34	Aug. 21	to Aug. 27	"	34	Aug. 20	to Aug. 26	"
35	Aug. 28	to Sep. 3	"	35	Aug. 27	to Sep. 2	"
36	Sep. 4	to Sep. 10	"	36	Sep. 3	to Sep. 9	"
37	Sep. 11	to Sep. 17	"	37	Sep. 10	to Sep. 16	"
38	Sep. 18	to Sep. 24	"	38	Sep. 17	to Sep. 23	"
39	Sep. 25	to Oct. 1	"	39	Sep. 24	to Sep. 30	"
40	Oct. 2	to Oct. 8	"	40	Oct. 1	to Oct. 7	"
41	Oct. 9	to Oct. 15	"	41	Oct. 8	to Oct. 14	"
42	Oct. 16	to Oct. 22	"	42	Oct. 15	to Oct. 21	"
43	Oct. 23	to Oct. 29	"	43	Oct. 22	to Oct. 28	"
44	Oct. 30	to Nov. 5	"	44	Oct. 29	to Nov. 4	"
45	Nov. 6	to Nov. 12	"	45	Nov. 5	to Nov. 11	"
46	Nov. 13	to Nov. 19	"	46	Nov. 12	to Nov. 18	"
47	Nov. 20	to Nov. 26	"	47	Nov. 19	to Nov. 25	"
48	Nov. 27	to Dec. 3	"	48	Nov. 26	to Dec. 2	"
49	Dec. 4	to Dec. 10	"	49	Dec. 3	to Dec. 9	"
50	Dec. 11	to Dec. 17	"	50	Dec. 10	to Dec. 16	"
51	Dec. 18	to Dec. 24	"	51	Dec. 17	to Dec. 23	"
52	Dec. 25	to Dec. 31	"	52	Dec. 24	to Dec. 30	"



AIRLINE
MODELS 84GSE2730A, 84GSE2731A

AIRLINE
MODELS 84GSE2730A, 84GSE2731A

AIRLINE MODEL 84GSE2731A

TRADE NAME	Airline, Models 84GSE2730A, 84GSE2731A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD. cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to rear stator of tuning gang. Low side to B-.	455KC (400~ Mod)	Point of non-interference.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.		Loop	1650KC	Tuning gang fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. signal.	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 84GSE2731A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	MW25E16	AFH1010D	UP5515		EL-25	■ Filter
B	50	150						▲ Filter
C2	.05	200	MW23E216	P288-05	GT2S5		TM-15	AVC Filter
C3	.05	400	MW23E416	P488-05	GT4S5		TM-15	Phono Isolation
C4	200	500	MW23E41	1468-0002	5W5T2	GP2K-200	1FM-32	Diode RF Filter
C5	.003	400	MW23E406	P688-003	GT6D3	GP2M-003	TM-23	Tone Compensation
C6	.005	400	MW23E208	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C7A	250		Note	1468-00025	5W5T25	GP2K-250	1FM-325	AF Plate Bypass
B	10000		Note	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C8	.02	400	MW23E413	P488-02	GT4S2		TM-12	Output Plate Bypass
C9	.05	400	MW23E416	P488-05	GT4S5		72P51	Line Isolation
C10	.05	400	MW23E416	P488-05	GT4S5		TM-15	Line Filter

Note. Items C7A, C7B, R7A, And R7B Are Combined Into One Unit Obtainable Under Mfgr's Part No. MW23E2023.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	MW28E41	Q13-133	AM-60-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
R2A	500KΩ	½	MW28E41	Q13-133	AM-60-Z	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions

RESISTORS

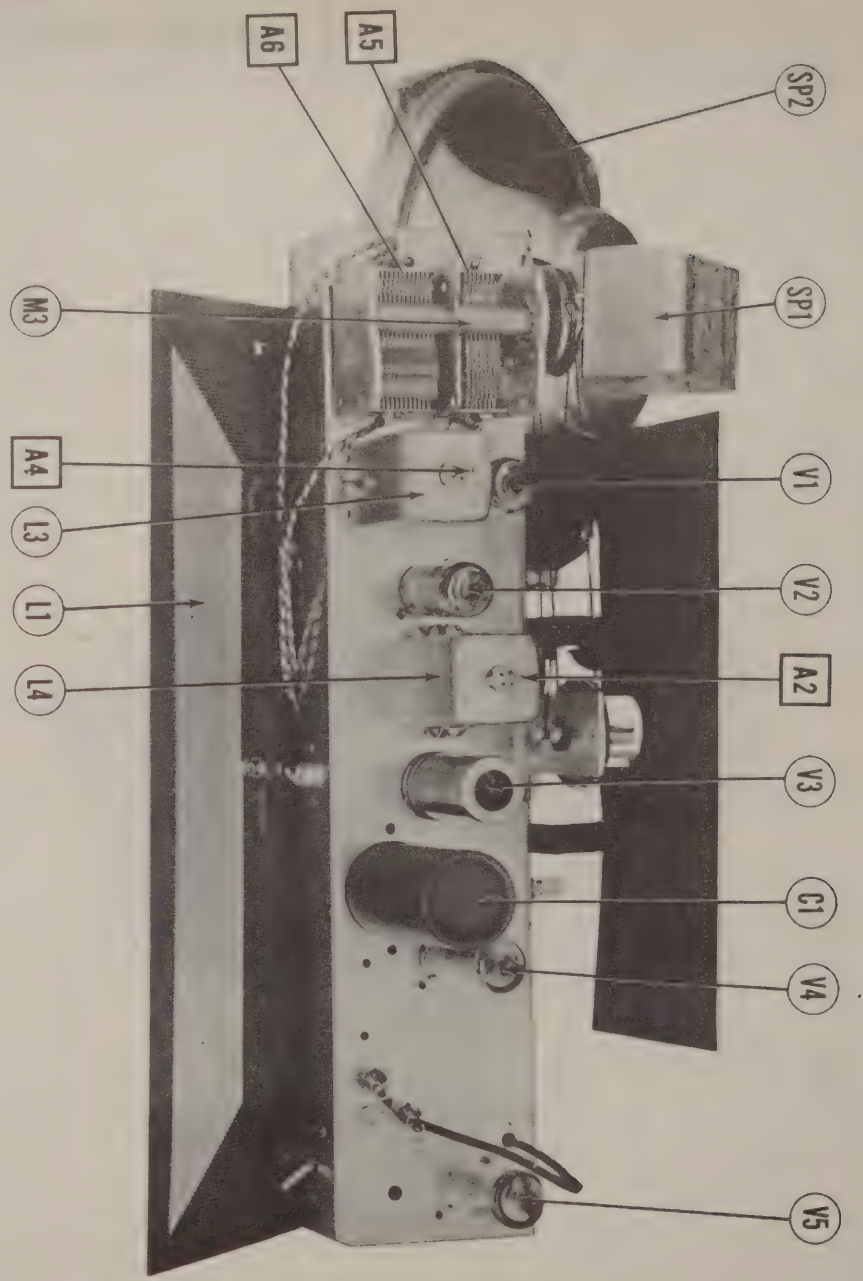
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½	MW27E223	BTS-22K	Osc. Grid
R4	3.3 Meg.	½	MW27E335	BTS-3.3 Meg	AVC Network
R5	1 Meg.	½	MW27E105	BTS-1 Meg.	Tone Compensation
R6	3.3 Meg.	½	MW27E335	BTS-3.3 Meg.	AF Grid
R7A	250KΩ	½	Note	BTS-220K	AF Plate
B	500KΩ	½	Note	BTS-470K	Output Grid
R8	150Ω	½	MW27E151	BW-½-150	Output Cathode
R9	2200Ω	1	MW27E222-3	BW-1-2200	Filter
R10	47Ω	½	MW27E470-2		Surge Limiter

Note. Items C7A, C7B, R7A, And R7B Are Combined Into One Unit Obtainable Under Mfgr's Part No. MW23E2023.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T1	4500Ω	4Ω	225Ω	.8Ω	MW22E28-2	A-3877†	RO-8†	A-2930†	† Drill One New Mtg. Hole

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	FIELD	V.C. IMP.	MW1E34	ST-117 MOD.P8-T	8A31	
	PM	4Ω				
SP2	CONE DIA.	V.C. DIA.				
	7 1/4"	3/4"				

R F COILS

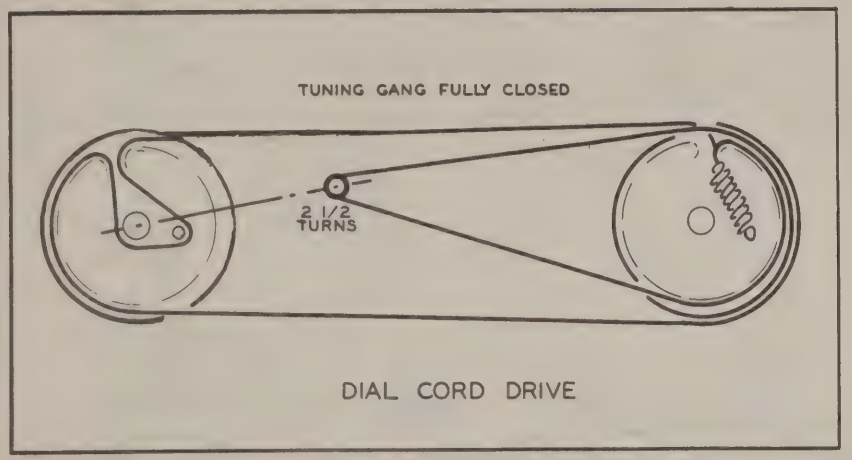
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	.2Ω	2.2Ω	MW64E21		
L2	Osc.Coil	1Ω	9Ω	MW20E397	14-1060*	* Add 50MMF from high side of tuning cap to Osc. grid
L3	Input IF	20Ω	20Ω	MW20E378		Alternate MW20E402
L4	Output IF	20Ω	20Ω	MW20E378		Alternate MW20E402

PHONO CARTRIDGE

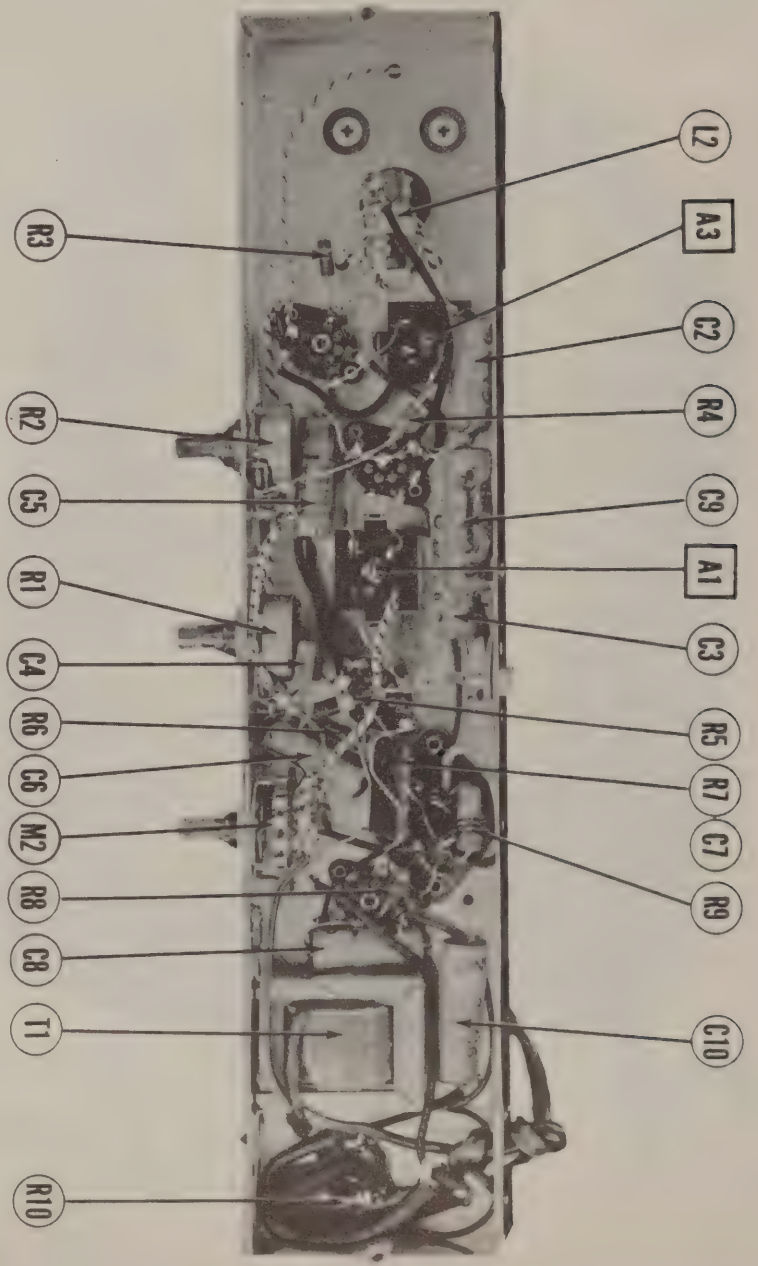
ITEM No.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
M1		LT-3M	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Switch	MW29E23	Radio-Phono
M3	2 Gang Var. Cap.	MW24E47	(27-469MMF, 23-150MMF)
	Dial Scale	MW36E47	
	Dial Pointer	MW35E25-2	
	Knob	MW37E56-2	With Dot
	Knob	MW37E56	

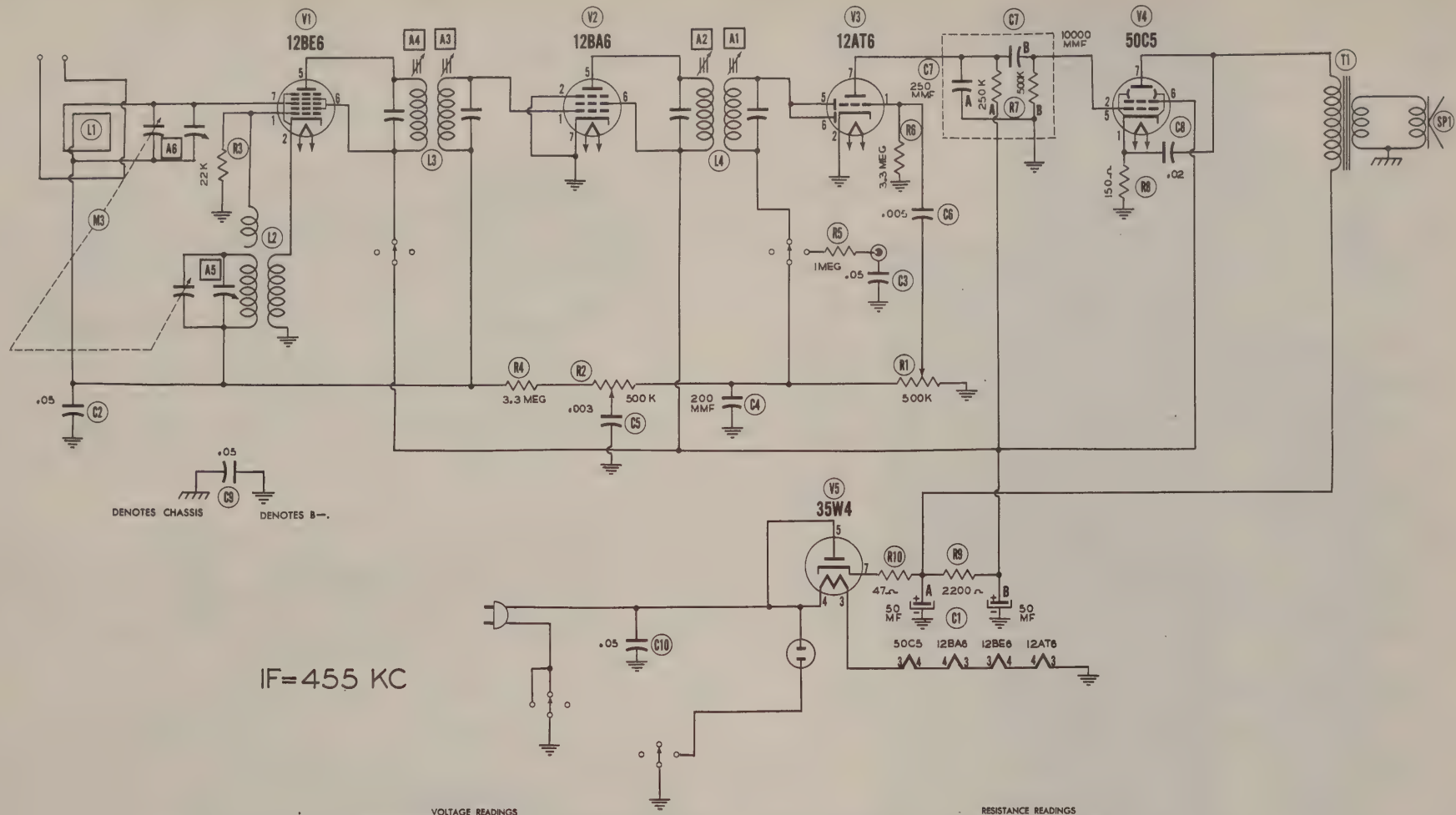


CHASSIS—BOTTOM VIEW



AIRLINE MODEL 84GSE2731A

AIRLINE MODEL 84GSE2731A



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	§-4.7 VDC	0V	24VAC	12VAC	80VDC	80VDC	-.2VDC
V 2	12BA6	-1VDC	0V	24VAC	37VAC	80VDC	80VDC	0V
V 3	12AT6	-.4VDC	0V	0V	12VAC	-.6VDC	-.6VDC	45VDC
V 4	50C5	5.2VDC	0V	85VAC	37VAC	0V	80VDC	115VDC
V 5	35W4	122VDC	0V	85VAC	117VAC	117VAC	110VAC	125VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	24Ω	12Ω	†2KΩ	†2KΩ	4.5 Meg.
V 2	12BA6	4.5 Meg.	0Ω	24Ω	36Ω	†2KΩ	†2KΩ	0Ω
V 3	12AT6	3.3 Meg.	0Ω	0Ω	12Ω	500KΩ	500KΩ	†250KΩ
V 4	50C5	150Ω	500KΩ	86Ω	36Ω	500KΩ	†2KΩ	†260Ω
V 5	35W4	†47Ω	Inf.	86Ω	120Ω	120Ω	110Ω	40KΩ

† Measured from Pin 7 of V5.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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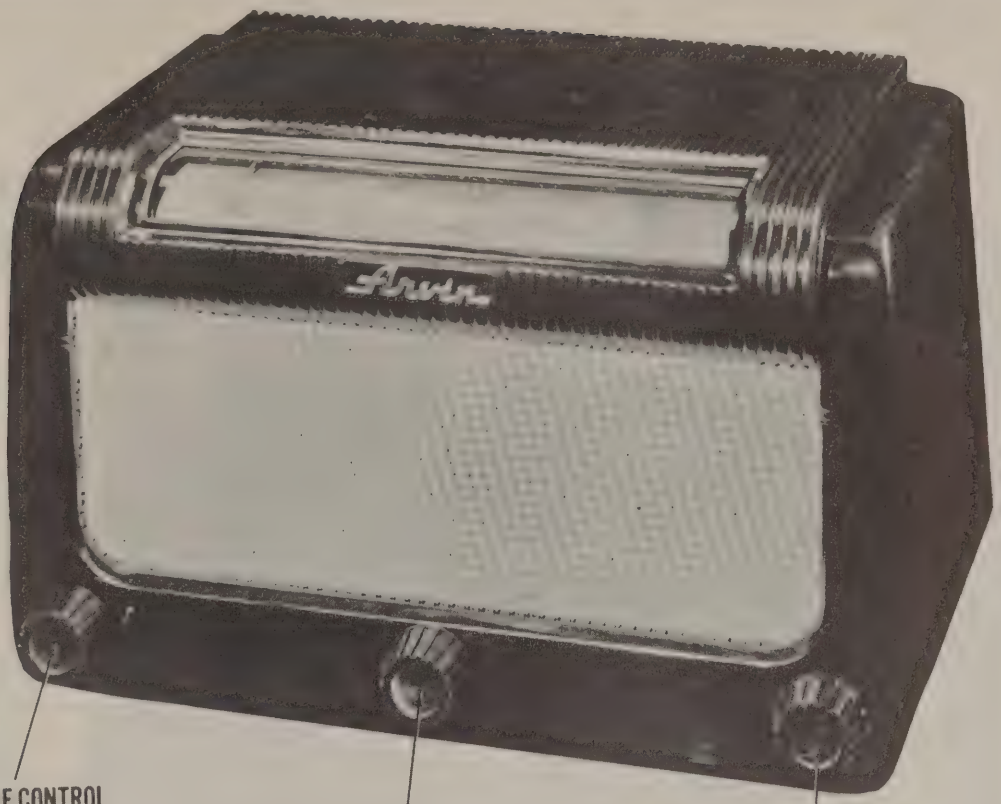
4918-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ARVIN
MODELS 360TFM, 361TFM
(Ch. RE-260)

ARVIN
MODELS 360TFM, 361TFM
(Ch. RE-260)



ARVIN
MODELS 360TFM, 361TFM
(Ch. RE-260)

ARVIN MODEL 360TFM

TRADE NAME	Arvin, Models 360TFM, 361TFM (Ch. RE-260)
MANUFACTURER	Noblitt-Sparks Industries, Inc., Columbus, Indiana
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(SIX)	Types 12AT7 FM Converter, 12BE6 AM Converter, 12BA6 FM 1st IF Amp., 12BA6FM 2nd IF, AM 1st IF, 19T8 DET-AVC-AF, 50L6GT Power Output
POWER SUPPLY	110-120 Volts AC-DC — RATING: .32 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC — FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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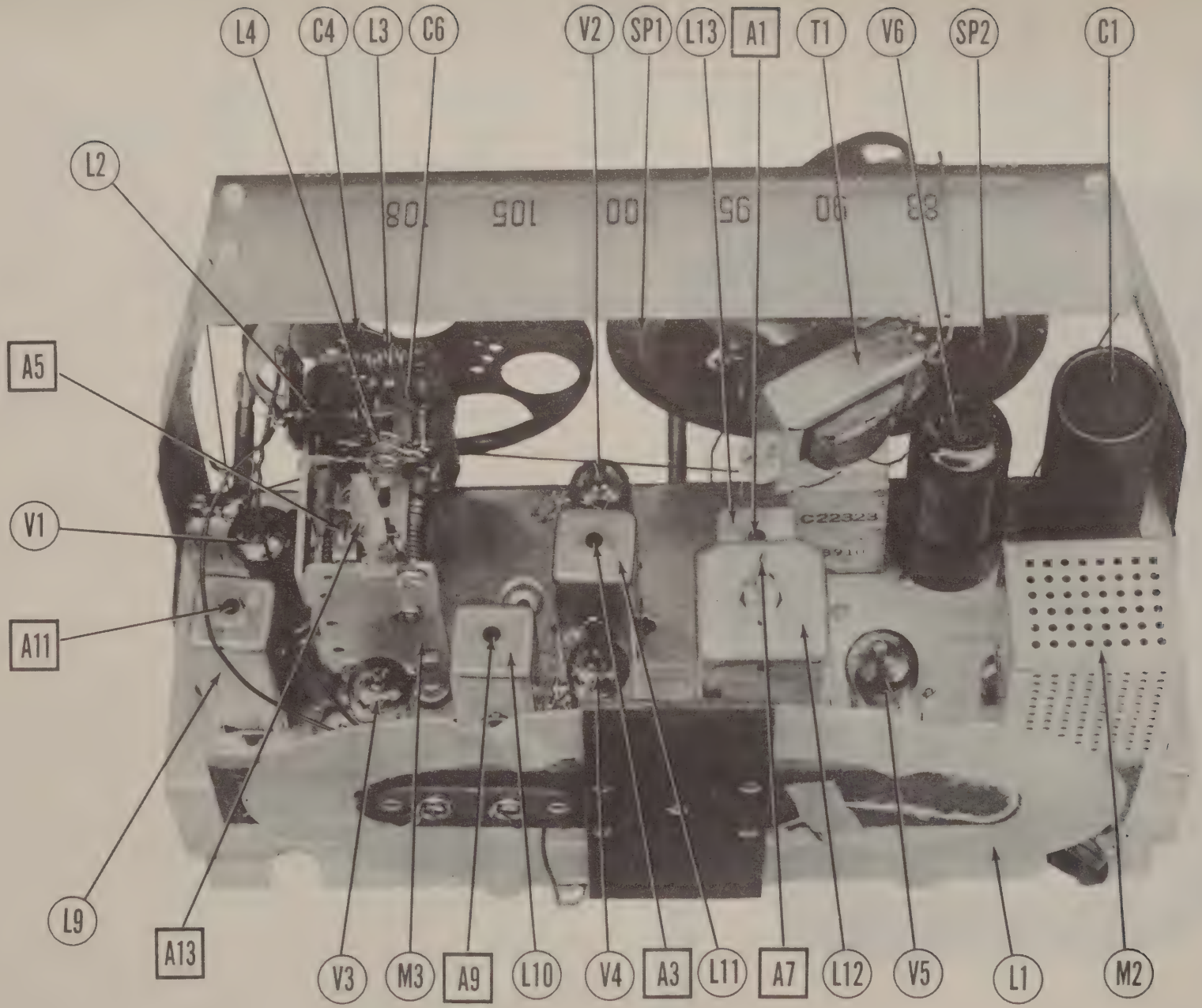
DATE 9/49 4918-2 SET #70 FOLDER #2


L4
C4
L3
C6
V2
SP1
L13
A1
T1
V6
SP2
C1
L2
A5
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L9
A13
V3
M3
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C13
C8
R10
A12
C9
L14
R4
R6
R7
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R5
L5
L17
C12
C11
C5
L6
R2
A6
A14
L7
R8
C16
L8
R9
C17
C2
M1
R12
A2
C22
R11
C28
R13
C32
C35
R21
R23
C38
R20

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM Converter	12AT7	12AT7	9A	
V2	AM Converter	12BE6	12BE6	7CH	
V3	1st FM IF Amp.	12BA6	12BA6	7BK	
V4	2nd FM IF 1st AM IF	12BA6	12BA6	7BK	
V5	DET-AVC-AF	19T8	19T8	9E	
V6	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	A22308	AF888D*	UP8415		EL-340*	▲ Filter
B	80	150						■ Filter
C2	30	150	A21675	PRS150/30	BR3015		UT-301	Filter
C3	100		C20203-101	1468-0001	5W5T1	GP1K-100	1FM-31	FM Line Ant. Coupling
C4	50		C20203-500	1468-00005	5W5Q5	GP1K-50	1FM-45	Ant. Coupling
C5	50		C20203-500	1468-00005	5W5Q5	GP1K-50	1FM-45	RF Coupling
C6	2.2		A20238-4					Osc. Coupling
C7	50		C20205-5	1468-00005	5W5Q5	N750L-47	1FM-45	Osc. Grid Cap
C8	5000		A21674	1467-005	1D5D5	811-005	29C1	Osc. Plate Bypass
C9	5000		A21674	1467-005	1D5D5	811-005	29C1	Mixer Plate Dec.
C10	.05	400	C20068-503	P488-05	GT4S5		72P51	Line Isolation
C11	10000		A22295	1467-01	1D3S1	821-01	36C1	FM Conv. Fil. Bypass
C12	10000		A22295	1467-01	1D3S1	821-01	36C1	FM Conv. Fil. Bypass
C13	1.5		A20238-3			NP0K-15		RF Coupling
C14	5000		A21674	1467-005	1D5D5	811-005	29C1	AVC Filter
C15	10000		A22295	1467-01	1D3S1	821-01	36C1	RF Bypass
C16	50	500	C20065-500	1468-00005	5W5Q5	GP1K-50	1FM-45	Osc. Grid Bypass
C17	220		C20203-221	1468-00025	5W5T25	GP2K-220	1FM-325	RF Bypass
C18	5000		A21674	1467-005	1D5D5	811-005	1FM-25	RF Bypass
C19	5000		A21674	1467-005	1D5D5	811-005	1FM-25	RF Bypass
C20A	4000		A20281-1	1467-004	1D5D4	811-005	36C2	1st IF Fil. Bypass
B	4000			1467-004	1D5D4	811-005		1st IF Fil. Bypass
C21	1.5		A20238-3			NP0K-1.5		IF Coupling
C22	.05	200	C20067-503	P288-05	GT2S5		TM-15	AVC Filter
C23	5000		A21674	1467-005	1D5D5	811-005	29C1	RF Bypass
C24	5000		A21674	1467-005	1D5D5	811-005	29C1	2nd IF Decoupling
C25	5000		A21674	1467-005	1D5D5	811-005	29C1	2nd IF Decoupling
C26	.05	400	C20068-503	P488-05	GT4S5		TM-15	2nd IF Decoupling
C27A	4000		A20281-1	1467-004	1D5D4	811-005	36C2	2nd IF Fil. Bypass
B	4000			1467-004	1D5D4	811-005		2nd IF Fil. Bypass
C28	100		C20203-101	1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C29	220		C20203-221	1468-00025	5W5T25	GP2K-220	1FM-325	Diode Load Cap Note
C30	220		C20203-221	1468-00025	5W5T25	GP2K-220	1FM-325	Diode Load Cap Note
C31	.5	200	A22388	P288-5	GT2P5		TC-5	Stabilizing Cap
C32	.003	200	C20067-302	P688-003	GT6D3	GP2M-003	TM-23	De-emphasis
C33	.01	400	C20068-103	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C34	1000		C20203-102	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C35	220		C20203-221	1468-00025	5W5T25	GP2K-220	1FM-325	AF Plate Bypass
C36A	4000		A20281-1	1467-004	1D5D4	GP2M-0047	36C2	DET-AF Fil. Bypass
B	4000			1467-004	1D5D4	GP2M-0047		DET-AF Fil. Bypass
C37	.005	400	C20203-501	P688-005	GT6D5	GP2M-0047	TM-15	Audio Coupling
C38	.01	400	C20068-103	P488-01	GT4S1	GP2-335-01	TM-11	Output Plate Bypass
C39	.05	200	C20067-503	P288-05	GT2S5		TM-15	AF Feedback
C40	500		C20203-501	1468-0005	5W5T5	GP2K-500	1FM-35	Rect. Bypass
C41	.05	400	A20068-503	P488-05	GT4S5		TM-15	Line Filter

* Parallel Sections To Obtain Desired Capacity.
Note. When Either Item C29 Or C30 Are Replaced, Replace Both With Capacitors Of Equal Value.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ARVIN PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1	Loop Ant.	0Ω	1Ω	A022316-1		
L2	Ant. Loading Coil	.2Ω		AA21444-1		3 Microhenries
L3	FM Ant.Coil	0Ω				
L4	FM Osc.Coil	0Ω				
L5	RF Choke	.2Ω		AA21444-1		3 Microhenries
L6	Parasitic Suppressor	0Ω		AA22345-1		4 Turns Of Bare Wire On 680Ω Resistor
L7	Parasitic Suppressor	0Ω		AA22334-1		15 Turns Of Enameled Wire On 100Ω Resistor Add Parasitic Suppressor
L8	AM Osc.Coil	7Ω		AA23291		
L9	1st FM IF	1Ω	1Ω	C22353		
L10	2nd FM IF	1Ω	1Ω	C22353		
L11	1st AM IF	10Ω	10Ω	C22352	16-6678	
L12	Ratio Det.	.1Ω	0Ω	AD22319-1		
L13	2nd AM IF	10Ω	10Ω	C22352	16-6678	
L14	Filament Choke	1Ω		A21673		
L15	Filament Choke	1Ω		A21673		
L16	Filament Choke	1Ω		A21673		
L17	RF Choke	.2Ω		A21444-1		3 Microhenries
L18	Line Choke	.2Ω		A21444-1		3 Microhenries
L19	Line Choke	.2Ω		A21444-1		3 Microhenries

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Switch	C22311	Band
M2	Rectifier	C20207-3	Selenium (150MA)
M3	2 Gang Var. Cap.	AD22324-1	(29-574MMF, 33-299MMF)
	Cabinet	E21536-1	Walnut
	Cabinet	E21536-3	Willow Green
	Dial Crystal	C21559	
	Dial Scale	D22304	
	Dial Pointer	AC22312-1	
	Knob	A22332-1	Mahogany
	Knob	A22332-2	Ivory

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	C21554	Q13-133	15/16-60 -Z	Volume control
B	Switch			76-1*	Switch -SPST#	

* Attach To R1A Per Instructions
\# Attached At Factory

RESISTORS

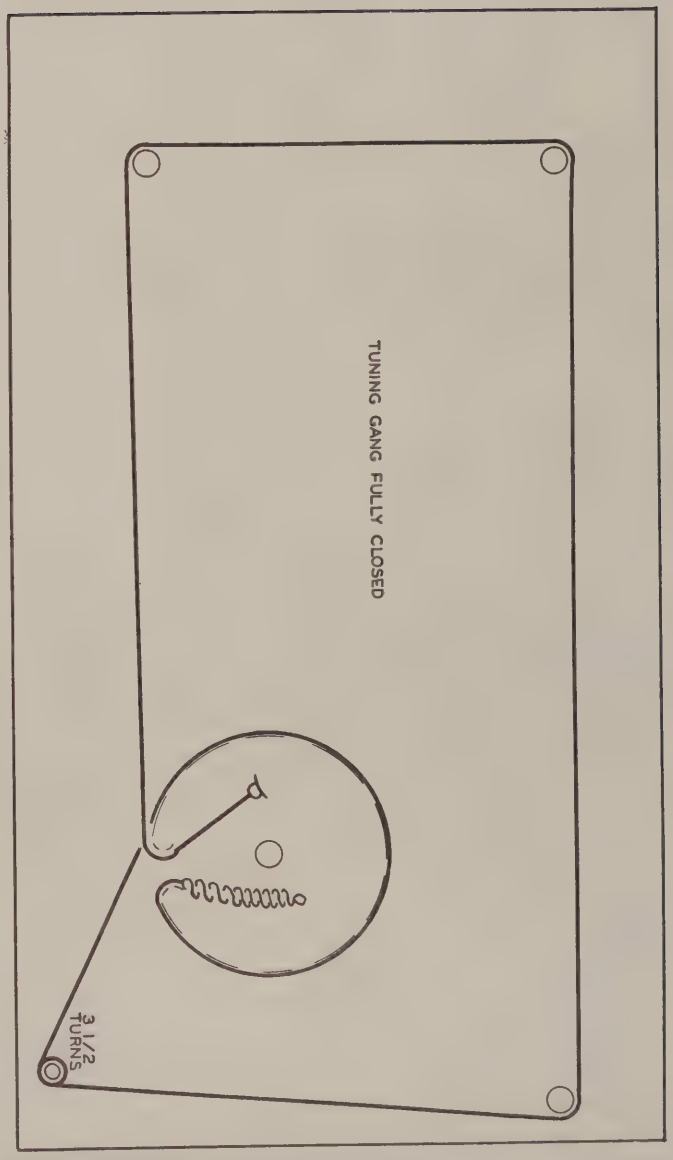
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
R2	15Ω	½	C20060-150		Parasitic Supp.
R3	470KΩ	½	C20060-474	BTS-470K	FM Conv. Grid
R4	330KΩ	½	C20060-334	BTS-330K	FM Conv. Grid
R5	1000Ω	½	C20060-102	BTS-1000	FM Conv. Plate Decoupling
R6	22KΩ	½	C20060-223	BTS-22K	FM Osc. Grid
R7	1000Ω	½	C20060-102	BTS-1000	FM Osc. Plate Decoupling
R8	47Ω	½	C20060-470		Parasitic Supp.
R9	22KΩ	½	C20060-223	BTS-22K	AM Osc. Grid
R10	1 Meg.	½	C20060-105	BTS-1 Meg.	AVC Network
R11	220Ω	½	C20060-221	BTS-220	1st IF Decoupling
R12	1 Meg.	½	C20060-105	BTS-1 Meg.	AVC Network
R13	100KΩ	½	C20060-104	BTS-100K	Ratio Det. Diode Load
R14	1 Meg.	½	C20060-105	BTS-1 Meg.	AVC Network
R15	22KΩ	½	C20060-223	BTS-22K	De-emphasis
R16	100KΩ	½	C20060-104	BTS-100K	Ratio Det. Diode Load
R17	4.7 Meg.	½	C20060-475	BTS-4.7 Meg.	AF Grid
R18	470KΩ	½	C20060-474	BTS-470K	AF Plate
R19	470Ω	½	C20060-471	BTS-470	Tone Compensation
R20	2200Ω	½	C20060-222	BTS-2200	Tone Compensation
R21	470KΩ	½	C20060-474	BTS-470K	Output Grid
R22	150Ω	½	C20060-151	BW-½-150	Output Cathode
R23	560Ω	2	C22336-561	BW-2-560	Filter Wire Wound
R24	100Ω	2	C22336-101	BW-2-100	Filter Wire Wound
R25	330KΩ	½	C20060-334	BTS-330K	Isolation
R26	22Ω	1	C20103-220		Surge Limiter

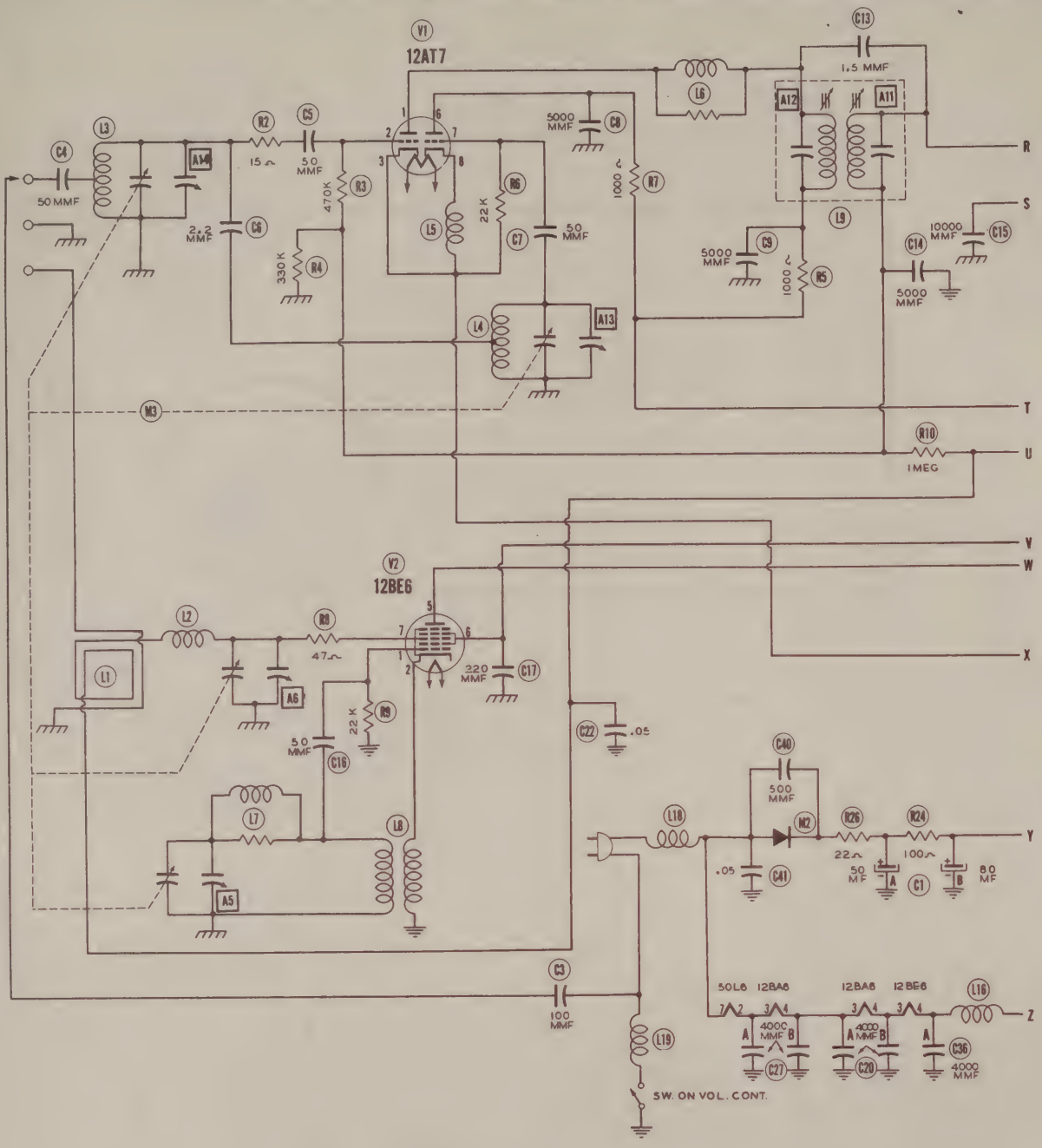
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2300Ω	3.5Ω	110Ω	.3Ω	AC22320-1	A-3876	RO-2	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD PM CONE DIA.	V.C. IMP. 3.5Ω V.C. DIA.	C22323	ST-105 ‡§ MOD.P6-X	5A07‡#	‡ Remount Output Transformer # Use Universal Mtg. Bracket § Fabricate Mtg. Bracket
SP2	4-5/8"	9/16"				





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	12AT7	95VDC	-.7VDC	0V	0V	12VAC	95VDC	§-.3 VDC	0V	6.3VAC
V 2	12BE6	§-11.5 VDC	0V	43VAC	31VAC	110VDC	110VDC	-.7VDC		
‡V3	12BA6	-.7VDC	0V	55VAC	43VAC	100VDC	100VDC	0V		
V 4	12BA6	-.7VDC	0V	66VAC	55VAC	105VDC	105VDC	0V		
V5A	19T8	-.5VDC	-1.4VDC	-.8VDC	31VAC	12VAC	-.6VDC	0V	-.6VDC	40VDC
‡ V5B	19T8	-.6VDC	-.9VDC	-.6VDC	31VAC	12VAC	-.6VDC	0V	-.5VDC	35VDC
V6	50L6GT	0V	66VAC	125VDC	110VDC	0V	0V	117VAC	6.8VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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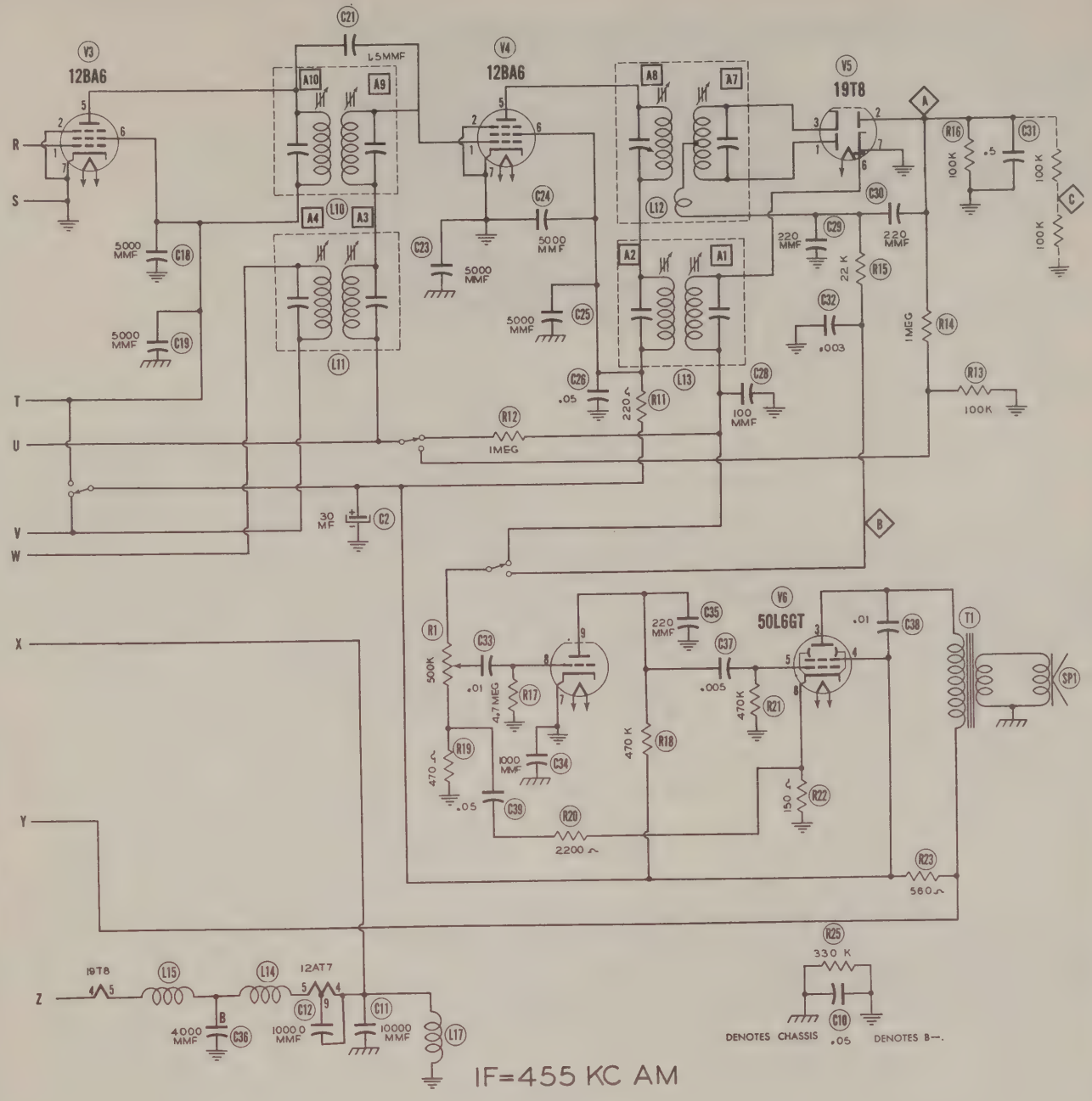

IF=455 KC AM

IF=10.7 MC FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	12AT7	†1.5KΩ	800KΩ	0Ω	0Ω	12Ω	†1.5KΩ	22KΩ	.6Ω	6.5Ω
V 2	12BE6	22KΩ	1Ω	46Ω	33Ω	†700Ω	†700Ω	700KΩ		
‡V3	12BA6	700KΩ	0Ω	58Ω	46Ω	†700Ω	†700Ω	0Ω		
V 4	12BA6	700KΩ	0Ω	70Ω	5.8Ω	†850Ω	†850Ω	0Ω		
V5A	19T8	Inf.	100KΩ	Inf.	32Ω	13Ω	500KΩ	0Ω	4.7 Meg	†470KΩ
‡ V5B	19T8	500KΩ	100KΩ	500KΩ	32Ω	13Ω	Inf.	0Ω	4.7 Meg	†470KΩ
V6	50L6GT	Inf.	70Ω	†650Ω	†700Ω	470KΩ	Inf.	120Ω	150Ω	

† Measured from Output of M2.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V2). Low side to B-.	455KC (400∿ Mod.)	AM (Left hand position)	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001MFD to reduce hum modulation.
2.	.05MFD	"	1650KC	"	"	"	A5	Adjust for max. output.
3.		Loop	1400KC	"	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of max. output.
4.		Loop	600KC	"	"	"		Adjust tuning condensor plates for maximum output. Check calibration at 1400, 1000, 600 and 540KC. If necessary, slightly retouch A6 and tuning condensor plates for optimum results. Tuning range should include 535KC and 1650KC.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 12BA6 (V3). Low side to B-.	10.7MC (450KC Sweep)	FM (Right hand position)	Tuning gang fully open	Vert.Amp. to Point (A) Low side to B-.	A8,A9, A10	Disconnect stabilizer capacitor C31. Adjust for maximum amplitude a and symmetry as per Fig 1
6.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V1). Low side to B-.	"	"	"	"	A11, A12	"
7.	.01MFD	"	"	"	"	Vert.Amp. to Point (B) Low side to B-.	A7	Reconnect capacitor C31. Adjust A7 so 10.7 marker is at center of diagonal line as per Fig 2. Slightly retouch A8 for maximum amplitude and straightness of diagonal line.

FIG. 1

FIG. 2

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point (A) to B-. The junction of these two resistors is alignment Point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 12BA6 (V3). Low side to B-.	10.7MC (Unmod.)	FM (Right hand position)	Tuning gang fully open	DC Probe to Point (A) Common to B-.	A8,A9, A10	Adjust for maximum deflection.
6.	.01MFD	High side to pin 2 (Grid) of 12AT7 (V1). Low side to B-.	"	"	"	"	A11, A12	"
7.	.01MFD	"	"	"	"	DC Probe to Point (B) Common to Point (C)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Two 150Ω carbon res.	Connect to ant. terminals with 150Ω resistor in each lead.	108.5MC (Unmod.)	FM	Tuning gang fully open	DC Probe to Point (A) Common to B-.	A13	Adjust for maximum deflection.
9.	"	"	87.5MC	"	Tuning gang fully closed	"	L4	Expand or compress osc. coil turns for maximum deflection. Repeat step 8.
10.	"	"	105MC	"	Tune for maximum deflection	"	A14	Adjust for maximum deflection. Rock tuning cap thru 105MC while making this adjustment.
11.	"	"	90MC	"	"	"	L3	Expand or compress ant. coil turns for maximum deflection. Repeat step 10.

CHALLENGER
MODEL CC60

CHALLENGER MODEL CC60

TRADE NAME Challenger, Model CC60
MANUFACTURER Challenger Amplifier Co., 663 Broadway, New York 12, N.Y.
TYPE SET AC Operated 3 Channel Audio Amplifier.
TUBES (EIGHT) Types 6SF5 1st MIC Pre Amp., 6SF5 2nd MIC Pre Amp., 6SL7GT AF Amp., 6V6GT Driver, (2) 807 Power Output, 5Y3GT Rectifier, 5R4GY Rectifier.

POWER SUPPLY 110-120 Volts AC RATING 1.4 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TOP CAP
V 1	6SF5	0V	0V	-.8VDC	0V	90VDC	0V	‡29VAC	‡29VAC	
V 2	6SF5	0V	0V	-.9VDC	0V	90VDC	330VDC	‡29VAC	‡29VAC	
V 3	6SL7GT	0V	95VDC	1VDC	0V	125VDC	1.2VDC	‡29VAC	‡29VAC	
V 4	6V6GT	0V	‡29VAC	300VDC	260VDC	-8.2VDC	.8VDC	‡29VAC	6.5VDC	
V 5	807	‡29VAC	330VDC	-27VDC	0V	‡29VAC				390VDC
V 6	807	‡29VAC	330VDC	-27VDC	0V	‡29VAC				410VDC
V 7	5Y3GT	0V	350VDC	0V	310VAC	0V	310VAC	0V	350VDC	
V 8	5R4GY	0V	470VDC	0V	570VAC	330VDC	590VAC	0V	470VDC	

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TOP CAP
V 1	6SF5	0Ω	0Ω	4.7 Meg.	0Ω	*550KΩ	Inf.	1000Ω	1000Ω	
V 2	6SF5	0Ω	0Ω	4.7 Meg.	0Ω	*580KΩ	*1000Ω	1000Ω	1000Ω	
V 3	6SL7GT	260KΩ	*300KΩ	1000Ω	500KΩ	*120KΩ	1000Ω	1000Ω	1000Ω	
V 4	6V6GT	0Ω	1000Ω	*1500Ω	*23KΩ	220KΩ	33KΩ	1000Ω	330Ω	
V 5	807	1000Ω	*1000Ω	1300Ω	0Ω	1000Ω				†82Ω
V 6	807	1000Ω	*1000Ω	1300Ω	0Ω	1000Ω				†80Ω
V 7	5Y3GT	Inf.	90KΩ	Inf.	110Ω	Inf.	110Ω	Inf.	90KΩ	
V 8	5R4GY	Inf.	10 Meg.	Inf.	35Ω	90KΩ	34Ω	Inf.	10 Meg.	

‡ 7VAC Measured Between Pins On Each Socket.
† Measured From Pin 2 Of V8.
* Measured From Pin 2 Of V7.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage greadings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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DATE 9/49 4918-3 SET #70 FOLDER #3

PARTS LIST AND DESCRIPTIONS

CHALLENGER MODEL CC60

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	1st MIC Pre Amp	6SF5	6SF5	6AB	
V2	2nd MIC Pre Amp	6SF5	6SF5	6AB	
V3	AF Amp.	6SL7GT	6SL7GT	8BD	
V4	Driver	6V6GT	6V6GT	7AC	
V5	Power Output	807	807		
V6	Power Output	807	807		
V7	Rectifier	5Y3GT	5Y3GT	5T	
V8	Rectifier	5R4GY	5R4GY	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	8	500		GL450/8-8	EB10018		CL-88	Filter Red-Black
B	8	500						Filter Blue-Yellow
C2	4	600		GL600-4	KR604		AP-46	Filter
C3	50	50		PRS50/50	BR505		TVA-16	Bias Filter
C4	100	25		PRS25/100	BRH251		TVA-8	Bias Filter
C5A	5	450		AF2222J	UP 111145		EL-410	1st MIC Pre Amp. Dec.
B	5	450						AF Amp. Dec.
C	5	450						AF Amp. Dec.
D	5	450						2nd MIC Pre Amp. Dec.
C6	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C7	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C8	.02	600		P688-02	GT6S2		TM-12	Audio Coupling
C9	.02	600		P688-02	GT6S2		TM-12	Audio Coupling
C10	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C11	100	500		1468-0001	5W5T1	GP1K-100	1FM-31	Tone Compensation
C12	.5	400		484-5	GT4P5		TC-5	Tone Compensation
C13	.001	600		P688-001	GT6D1	GP2L-001	TM-21	Tone Compensation
C14	.006	600		P688-006	GT6D6	GP2M-005	TM-26	Tone Compensation Note
C15	.002	600		P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C16	.002	600		P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C17	.006	600		P688-006	GT6D6	GP2M-005	TM-25	Tone Compensation Note
C18	.05	400		P488-05	GT4S5		TM-15	Audio Coupling
C19	.03	600		P688-03	GT6S3		TM-13	Tone Compensation
C20	.1	400		P488-1	GT4P1		TM-1	Line Filter

Note. Some Models Use .005 MFD In This Application.

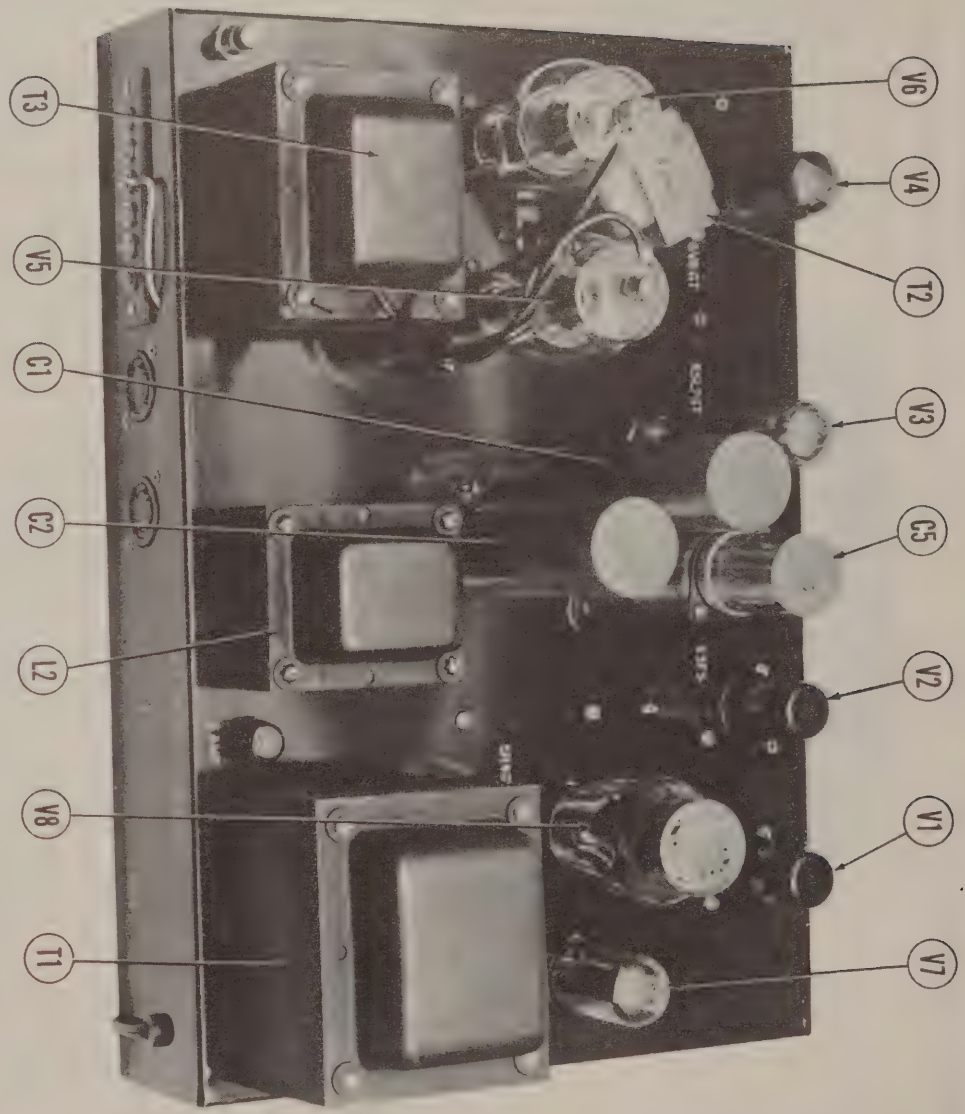
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½	V202-A	Q13-133	M-60-Z	Mike 1 control
R2	500KΩ	½	V202-A	Q13-133	M-60-Z	Mike 2 control
R3	500KΩ	½	V202-A	Q13-133	M-60-Z	Phono control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHALLENGER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R4	4.7 Meg.	½		BTS-4.7 Meg	1st Mike Amp. Grid
R5	500KΩ	½		BTS-470K	1st Mike Amp. Plate
R6	47KΩ	½		BTS-47K	1st Mike Amp. Decoupling
R7	4.7 Meg.	½		BTS-4.7 Meg	2nd Mike Amp. Grid
R8	500KΩ	½		BTS-470K	2nd Mike Amp. Plate
R9	47KΩ	½		BTS-47K	2nd Mike Amp. Decoupling
R10	220KΩ	½		BTS-220K	Isolation
R11	220KΩ	½		BTS-220K	Isolation
R12	500KΩ	½		BTS-470K	Isolation
R13	1000Ω	1		BTA-1000	AF Cathode
R14	220KΩ	1		BTA-220K	AF Plate
R15	47KΩ	½		BTS-47K	AF Plate Decoupling
R16	500KΩ	½		BTS-470K	Tone Compensation
R17	33KΩ	½		BTS-33K	Tone Compensation
R18	33KΩ	½		BTS-33K	Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CHALLENGER PART No.	IRC PART No.	
R19	100KΩ	½		BTS-100K	Tone Compensation
R20	100KΩ	½		BTS-100K	Tone Compensation
R21	500KΩ	½		BTS-470K	AF Grid
R22	1000Ω	1		BTA-1000	AF Cathode
R23	100KΩ	½		BTS-100K	AF Plate
R24	220KΩ	½		BTS-220K	Driver Grid
R25	330Ω	½		BTA-330	Driver Cathode
R26	22KΩ	1		BTA-22K	Driver Screen
R27	10KΩ	2		BT-2-10K	Feed Back
R28	1000Ω	10		ABA1000#	Voltage Divider tapped at 500Ω
R29	820Ω	1		BTA-820	Filter

Set Slider At 500Ω

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 1.4A	1200VCT .130A - DC	580VCT @ .027A DC	5VAC @ 2A	T361			
		SEC. 4	SEC. 5					
		5VAC @ 2A	6.3VAC @ 3.2A					

TRANSFORMER (DRIVER)

ITEM No.	RATING			REPLACEMENT DATA				INSTALLATION NOTES
	TURNS RATIO	DC RES.		CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI. TO ½ SEC.	PRI.	SEC.					
T2	2 TO 1	605Ω	600Ω CT	T256	A-3802#		A-3126	# Drill New Mounting Holes

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T3	3300Ω CT	4Ω 8Ω 15Ω 70V 140V	62Ω CT	.2Ω .25Ω .35Ω 3.9Ω 8Ω	T256	A-3802			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	CHALLENGER PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.130A	50Ω	3.7H	T510	C-1703‡	R-1230	C-2991#	# Drill New Mounting Holes. ‡ Remove Brackets And Mount Half Shell Style.
L2	.027A	190Ω	4.6H	T501	C-1080		C-2977	

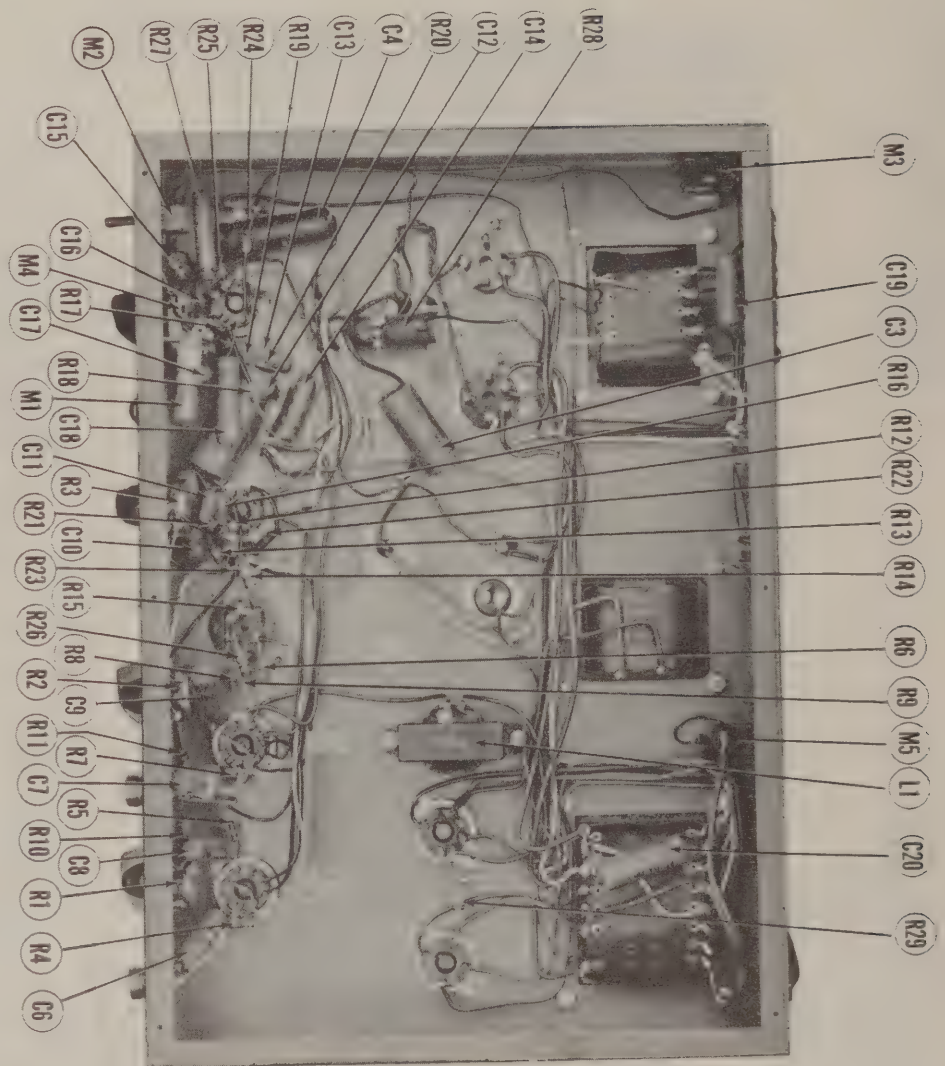
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CHALLENGER PART No.		
M1	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	CHALLENGER PART No.	NOTES
M2	Switch		Power
M3	Switch		Interlock
M4	Switch		Tone
M5	Fuse		3 Amp.

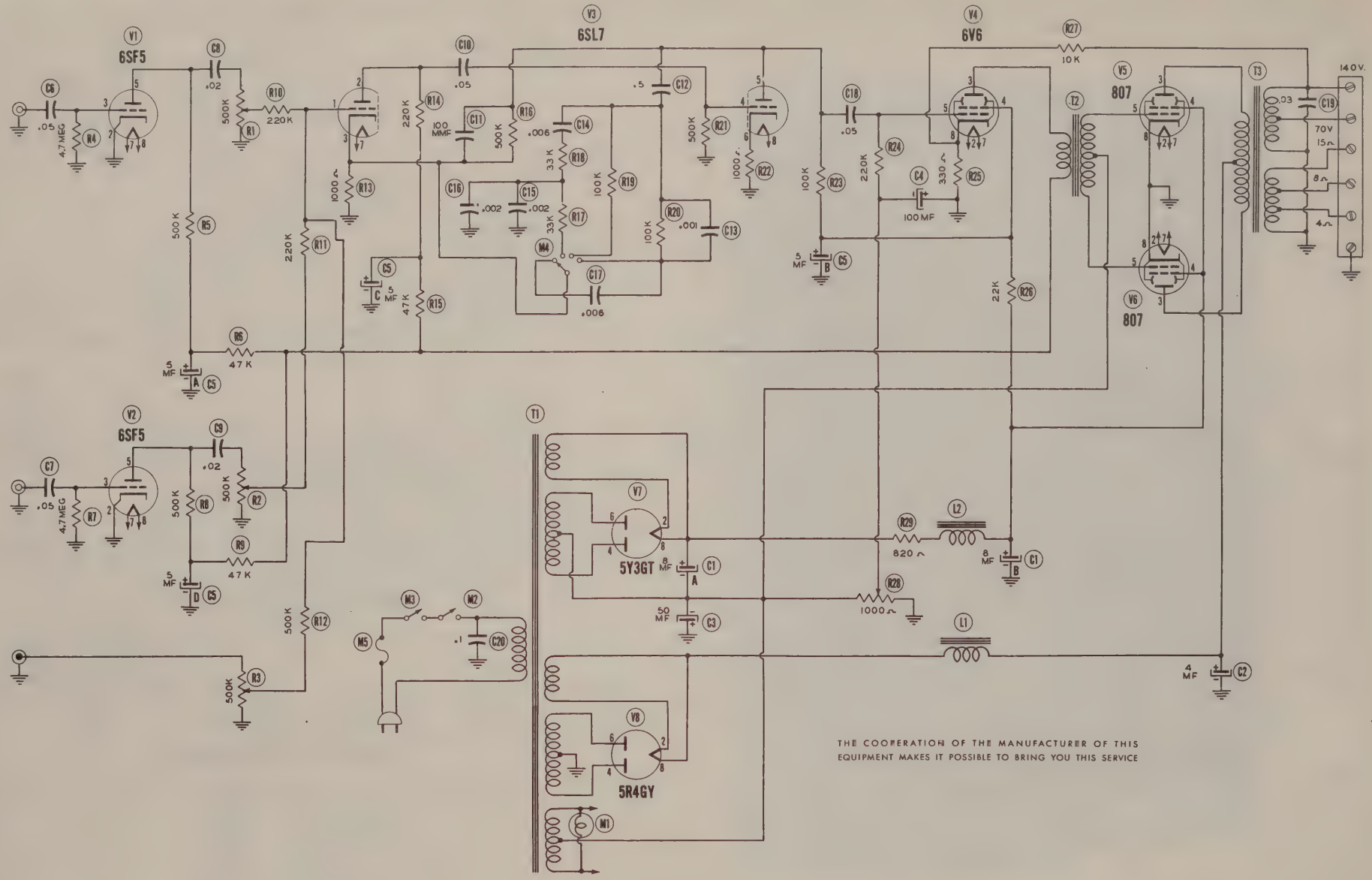
CHASSIS—BOTTOM VIEW



DATE 9/49 4918-3 SET #70 FOLDER #3

CHALLENGER MODEL CC60

CHALLENGER MODEL CC60



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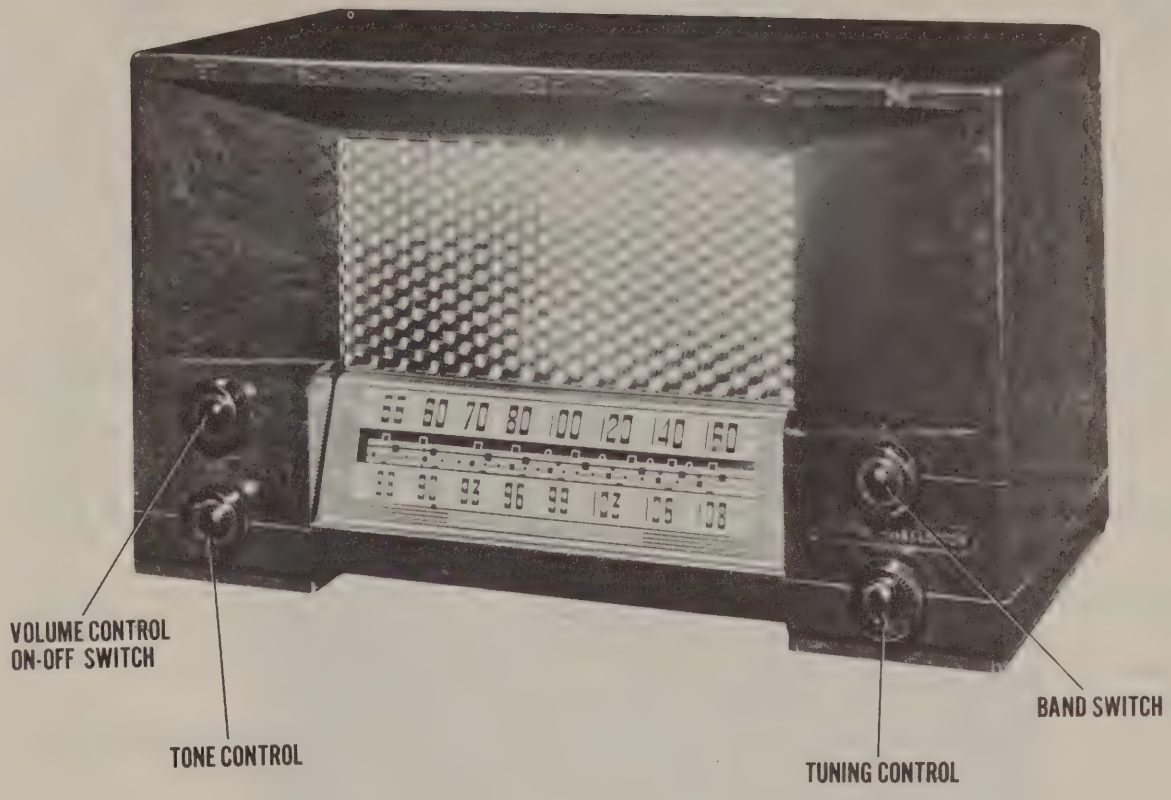
EMERSON
MODEL 556, 557, 565
(Ch. 120018B)

EMERSON
MODEL 556, 557, 565
(Ch. 120018B)



EMERSON
MODEL 556, 557, 565
(Ch. 120018B)

EMERSON MODEL 556

TRADE NAME	Emerson, Models 556, 557, 565 (Ch. 120018B)
MANUFACTURER	Emerson Radio & Phonograph Corp., 111 8th Ave., New York 11, N.Y.
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES (SEVEN)	Types 12BA6 FM RF Amp., 12BA7 Converter, 12BA6 IF Amp., 12BA6 FM 2nd IF, 12AU6 FM Limiter, 19T8 DET-AVC-AF, 35B5 Power Output.
POWER SUPPLY	105-125 Volts AC-DC — RATING .31 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC — FREQ. MOD. 88-108MC

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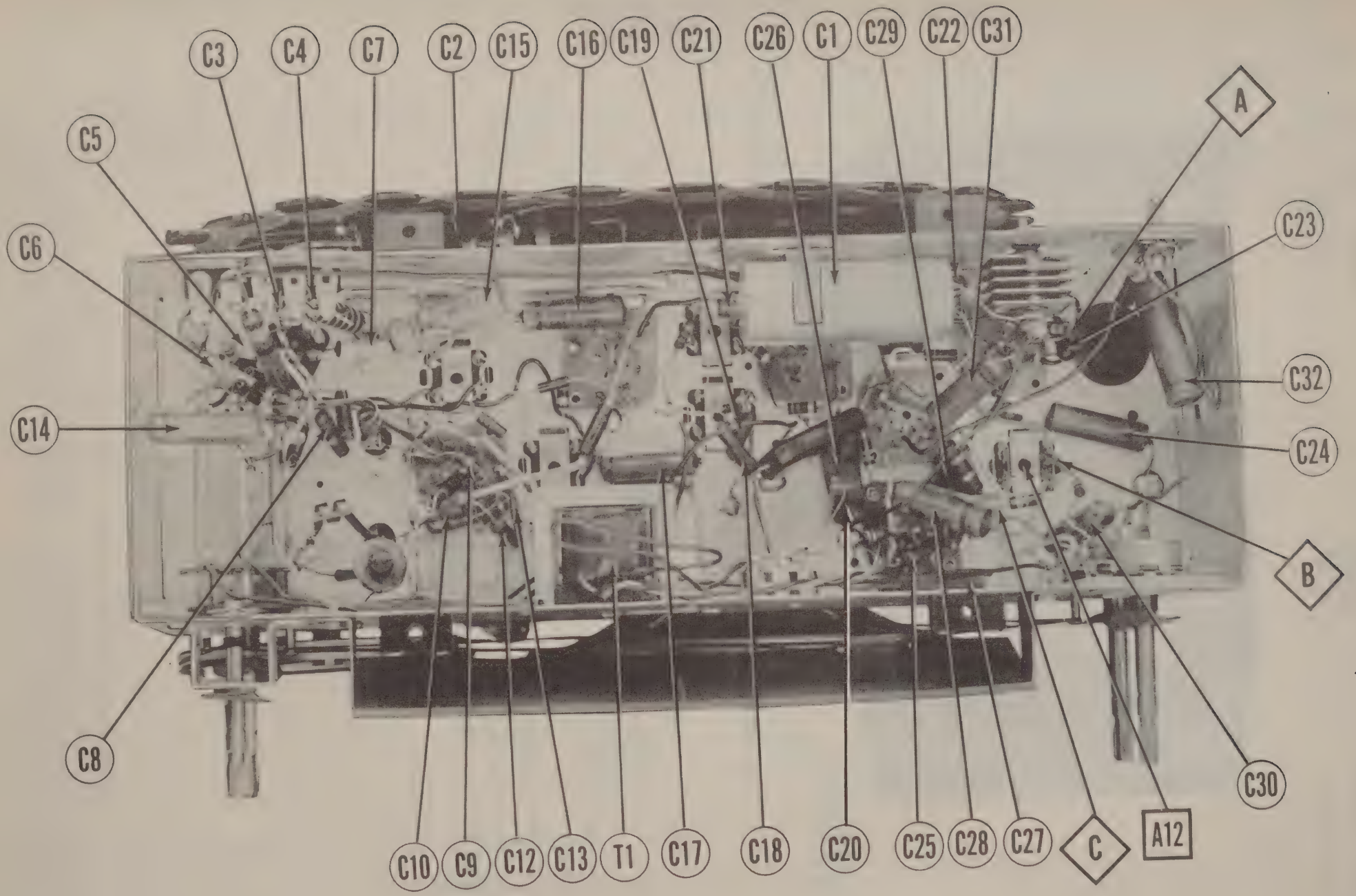
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L16
L14
L2
L4
R6
R9
R8
R14
R13
R10
R11
R22
R17
R16
R25

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
V1	FM RF Amp.	12BA6	12BA6	7BK	
V2	Converter	12BA7	12BA7	8CT	
V3	1st IF Amp.	12BA6	12BA6	7BK	
V4	FM 2nd IF Amp.	12BA6	12BA6	7BK	
V5	FM Limiter	12AU6	12AU6	7BK	
V6	DET-AVC-AF	19T8	19T8	9E	
V7	Power Output	35B5	35B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150	925126	AF888D*	UP8415		UT-501	Filter Red
B	100	150					TVA-17	Filter
C2	2.2							Ext. Ant. Coupling
C3	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	Ant. Coupling
C4	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	Ant. Isolation
C5	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	FM RF Cath. Bypass
C6	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	FM RF Screen Bypass
C7	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	FM RF Fil. Bypass
C8	75		928015	1468-000075	5W5Q7	GP1K-75	1FM-475	RF Coupling
C9	1.5		915011			NP0K-1.5		Osc. Coupling
C10	75		928015	1468-000075	5W5Q7	GP1K-75	1FM-475	Osc. Grid Cap
C11	5		928017	1469-000005	5R5V5	N750K-5	MS-55	Fixed Trimmer
C12	15		928016			GP1K-15	MS-415	Conv. Cath. Bypass
C13	5000		928109	1467-005	1D5D5	GP2M-005	1FM-25	Osc. Anode Bypass
C14	.01	200	920092	P488-01	GT2S1	GP2-335-01	TM-11	RF Bypass
C15	.05	400	920030	P488-05	GT4S5		TM-15	AVC Filter
C16	.01	400	920090	P488-01	GT4S1	GP2-335-01	TM-11	1st IF Fil. Bypass
C17	.01	200	920092	P488-01	GT2S1	GP2-335-01	TM-11	1st IF Decoupling
C18	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C19	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C20	.01	400	920090	P488-01	GT4S1	GP2-335-01	TM-11	2nd IF Cath. Bypass
C21	.01	200	920092	P488-01	GT2S1	GP2-335-01	TM-11	2nd IF Decoupling
C22	24	500	928110	1468-000025	5W5Q25	GP1K-25	MS-425	IF Coupling
C23	1500		928006	1467-0015	1W5D15	GP2L-0015	1FM-215	Limiter Fil. Bypass
C24	.01	400	920090	P488-01	GT4S1	GP2-335-01	TM-11	Limiter Decoupling
C25	100		910010	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C26	470	500	910014	1468-0005	5W5T5	GP2K-500	1FM-35	De-emphasis
C27	.002	400	920515	P688-002	GT6D2	GP2M-002	TM-22	Audio Coupling
C28	.01	400	920090	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C29	470	500	910014	1468-0005	5W5T5	GP2K-500	1FM-35	Tone Compensation
C30	.002	600	920515	P688-002	GT6D2	GP2M-002	TM-22	Tone Compensation
C31	.01	400	920090	P488-01	GT4S1	GP2-335-01	TM-11	Output Plate Bypass
C32	.05	400	920030	P488-05	GT4S5		TM-15	Line Filter

* Parallel Sections To Obtain Desired Capacity.

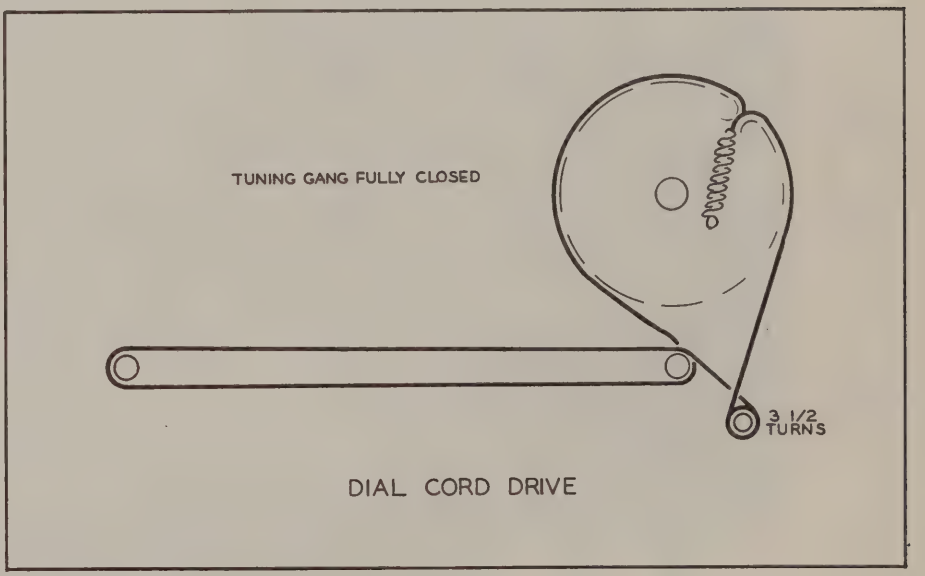
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	500KΩ	½	390057	Q11-133	AM-58-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions
R2A	400KΩ	½	390046	Q13-133	AM-60-Z	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A per instructions

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M1	Switch	510037	
M2	Rectifier	817101	Selenium
M3	2 Gang Var. Cap.	900045	(19-530MMF, 16-207MMF)
	Dial Crystal	520071	
	Dial Pointer	525017	
	Knob	460470	
	Cabinet	140113	Models 556, 557
	Cabinet	140125	Model 565



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
R3	68Ω	½	340210	BW-½-68	FM RF Cathode
R4	150Ω	½	350290	BW-½-150	FM RF Screen Decoupling
R5	22KΩ	½	340810	BTS-22K	Osc. Grid
R6	150Ω	½	350290	BW-½-150	Osc. Plate Decoupling
R7	150Ω	½	350290		Parasitic Supp.
R8	68Ω	½	340210		Parasitic Supp.
R9	150Ω	½	350290	BW-½-150	1st IF Decoupling
R10	68Ω	½	340210		Parasitic Supp.
R11	68Ω	½	340210	BW-½-68	2nd FM IF Cathode
R12	680Ω	½	340450	BTS-680	2nd FM IF Decoupling
R13	47KΩ	½		BTS-47K	Diode Filter
R14	1 Meg.	½	351210	BTS-1 Meg.	Diode Load
R15	1.8 Meg.	½		BTS-1.8 Meg	AVC Network
R16	100KΩ	½	340970	BTS-100K	Limiter Grid
R17	15KΩ	½	350770	BTS-15K	Limiter Decoupling
R18	100KΩ	½	340970	BTS-100K	Disc. Diode Load
R19	100KΩ	½	340970	BTS-100K	Disc. Diode Load
R20	68KΩ	½	350930	BTS-68K	De-emphasis
R21	4.7 Meg.	½	351370	BTS-4.7 Meg	AF Grid
R22	470KΩ	½	351130	BTS-470K	AF Plate
R23	180Ω	1	370310	BW-1-180	Output Cathode
R24	999Ω	3	394042	BW-2-1000	Filter Wire Wound
R25	22Ω	1	380090		Surge Limiter

TRANSFORMER (OUTPUT)

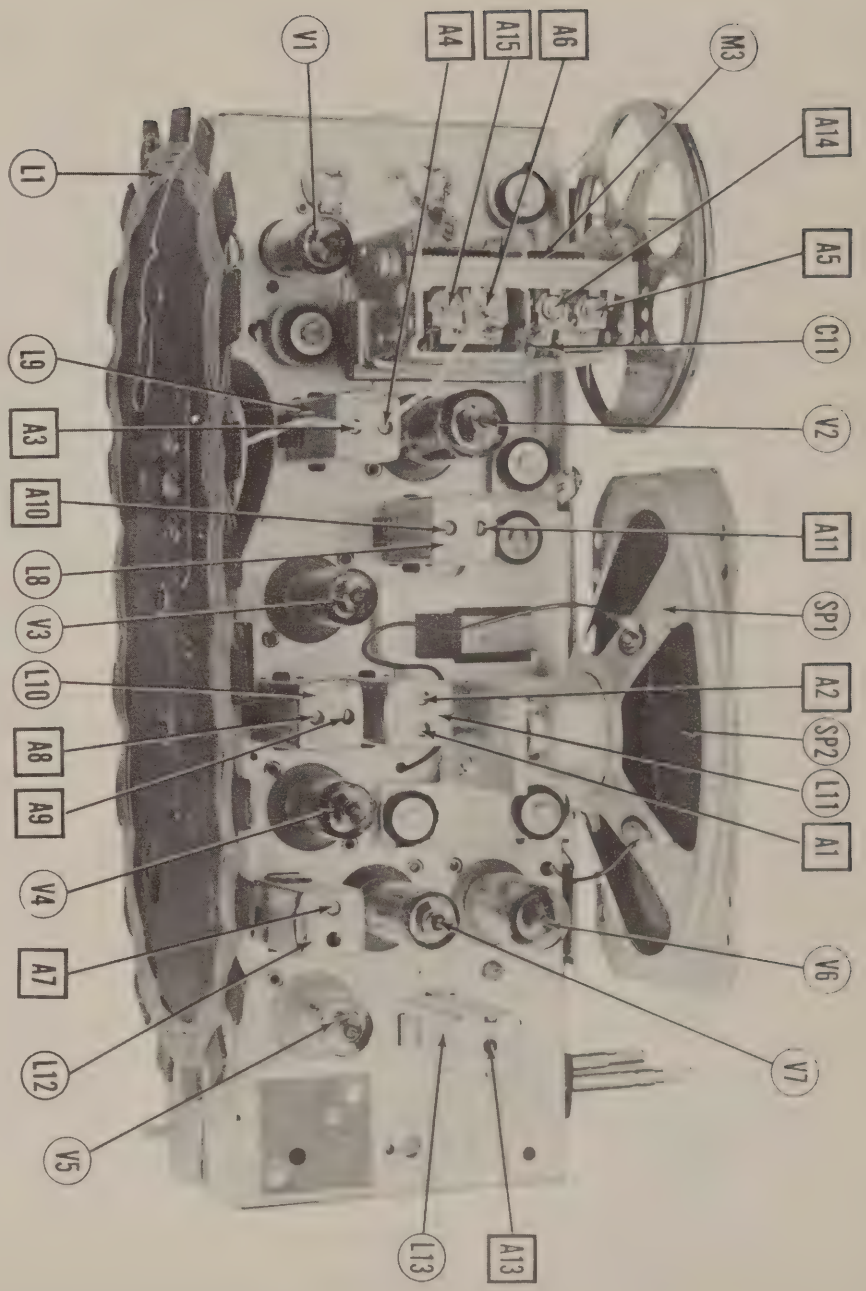
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2500Ω	3.7Ω	170Ω	.8Ω	734041	A-3876	RO-2	A-2928	

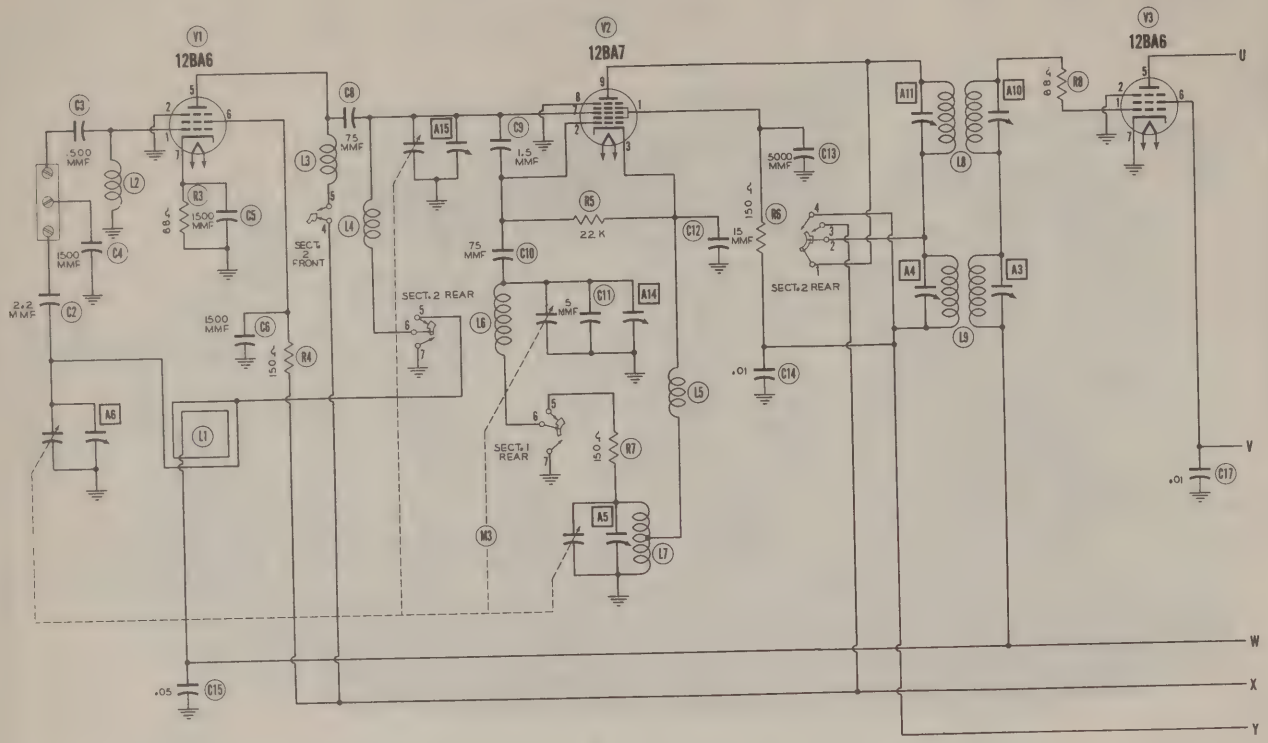
SPEAKER

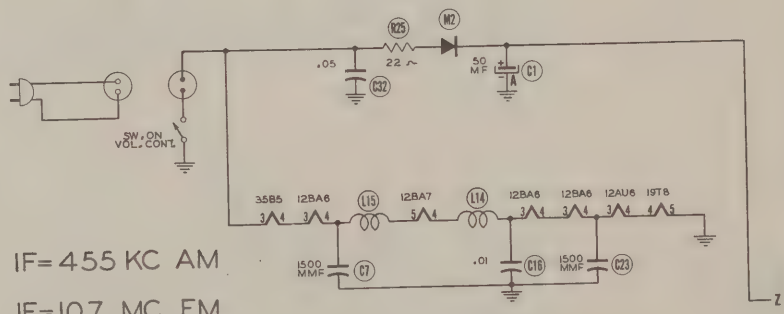
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V.C. IMP.				
	PM	3.7Ω	180031P		46A07	
SP2	CONE DIA.	V.C. DIA.				
	3 7/8"x 5-7/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
L1	Loop Ant.	.2Ω	1.2Ω	700011		Alternate Part #700021
L2	FM Ant.Coil	0Ω		710019		
L3	RF Choke	0Ω		705002		
L4	FM RF Coil	0Ω		713024		
L5	RF Choke	0Ω		705002		
L6	FM Osc.Coil	0Ω		716013		
L7	AM Osc.Coil	9Ω		716015	14-1060	
L8	1st FM IF	.8Ω	.8Ω	720082		Alternate Parts 720024 and 720067
L9	1st AM IF	15Ω	15Ω	720084	16-6678	Alternate Parts 720031 and 720075
L10	2nd FM IF	.8Ω	.8Ω	720082		Alternate Parts 720025 and 720067
L11	2nd AM IF	15Ω	15Ω	720085	16-6678	Alternate Parts 720032 and 720076
L12	3rd FM IF	1.8Ω		720083		Alternate Parts 720077 and 720069
L13	Ratio Det.	.5Ω	.1Ω	708005		Alternate Parts 708012 and 708013
L14	Filament Choke	0Ω		705002		
L15	Filament Choke	0Ω		708002		
L16	RF Choke	0Ω		705013		







IF = 455 KC AM

IF = 10.7 MC FM

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	12BA6	0V	0V	80VAC	68VAC	87VDC	87VDC	.8VDC		
V2A	12BA7	100VDC	5-2.2 VDC	0V	56VAC	68VAC	0V	-1.1VDC	0V	105VDC
‡ V2B	12BA7	87VDC	4-5.2 VDC	0V	56VAC	68VAC	0V	0V	0V	87VDC
V3	12BA6	-1VDC	0V	56VAC	45VAC	105VDC	105VDC	0V		
‡V4	12BA6	0V	0V	45VAC	32VAC	82VDC	82VDC	.7VDC		
‡V5	12AU6	-.3VDC	0V	32VAC	19VAC	50VDC	50VDC	0V		
V6A	19T8	-.4VDC	-.4VDC	0V	19VAC	0V	-.4VDC	0V	-.4VDC	42VDC
‡ V6B	19T8	-.4VDC	-.8VDC	0V	19VAC	0V	-.4VDC	0V	-.4VDC	40VDC
V7	35B5	0V	6.5VDC	117VAC	80VAC	135VDC	105VDC	0V		

‡TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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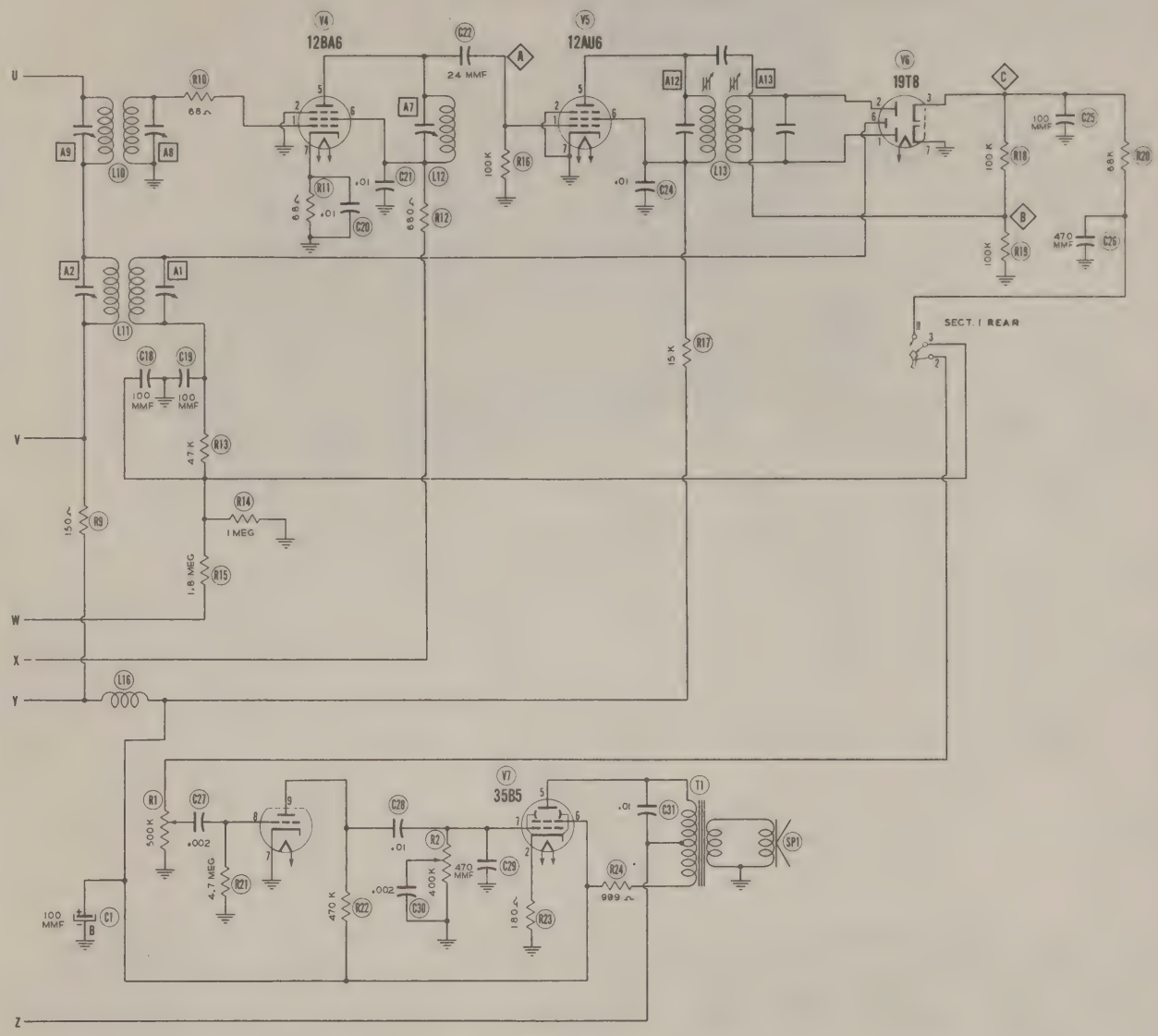

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	12BA6	0Ω	0Ω	90Ω	56Ω	†100.0Ω	†1000Ω	68Ω		
V2A	12BA7	†1100Ω	22KΩ	1Ω	56Ω	68Ω	0Ω	2.5 Meg.	0Ω	†1000Ω
‡V2B	12BA7	†1100Ω	22KΩ	1Ω	56Ω	68Ω	0Ω	0Ω	0Ω	†1000Ω
V3	12BA6	2 Meg.	0Ω	56Ω	44Ω	†1000Ω	†1000Ω	0Ω		
‡V4	12BA6	6MΩ	0Ω	44Ω	32Ω	†1.5KΩ	†1.5KΩ	68Ω		
‡V5	12AU6	100KΩ	0Ω	32Ω	19Ω	†15KΩ	†15KΩ	0Ω		
V6A	19T8	100KΩ	1 MΩ	200KΩ	19Ω	0Ω	1 Meg.	0Ω	4.7 Meg	†470KΩ
‡V6B	19T8	100KΩ	1 MΩ	200KΩ	19Ω	0Ω	1 Meg.	0Ω	4.7 Meg	†470KΩ
V9	35B5	400KΩ	1MΩ	110Ω	40Ω	†160Ω	†1000Ω	400KΩ		

† Measured from Output of M2.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To position pointer, turn variable condenser fully closed and set pointer to reference mark on dial backplate at the low frequency end of the dial.

Volume control should be set at maximum position. The output of the signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment tool for all adjustments.

Use isolation transformer if available; otherwise connect a .1MFD condenser in series with low side of signal generator to chassis.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Pin 7 (grid) of 12BA7 (V2). Low side to chassis.	455KC	BC	Tuning condenser fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. Reduce dummy antenna to .001MFD. if isolation transformer is not used.
2.		Loop	1600KC	"	"	"	A5	Form loop of several turns of wire. Radiate signal into receiver loop. Adjust for maximum output.
3.		Loop	1400KC	"	Tune for max. output.	"	A6	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to Pin 1 (grid) of 12BA6 (V4). Low side to chassis.	10.7MC (Unmodulated)	FM	Tuning condenser fully open.	Connect DC probe to point "A". Common to chassis.	A7	Adjust for maximum output.
5.	.01MFD	High side to Pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A8, A9	"
6.	.01MFD	High side to Pin 7 (grid) of 12BA7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
7.	.01MFD	High side to Pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	Connect DC probe to point "B". Common to chassis.	A12	"
8.	.01MFD	"	"	"	"	Connect DC probe to point "C". Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal, with 60 cycle modulation and 450KC Sweep. Use 120 cycle sawtooth sweep voltage in oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to Pin 1 (grid) of 12BA6 (V3). Low side to chassis.	10.7MC (450KC Sweep)	FM	Tuning condenser fully open.	Vertical input to Point "A". Ground to chassis.	A7, A8, A9	Adjust for maximum amplitude and symmetry as per Fig. 1.
5.	.01MFD	High side to Pin 7 (grid) of 12BA7 (V2). Low side to chassis.	"	"	"	"	A10, A11	"
6.	.01MFD	High side to Pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	Vertical input to Point "C". Ground to chassis.	A12, A13	Alternately adjust A12 for maximum amplitude and A13 for maximum straightness of cross-over lines, with cross-over occurring at center of pattern as per Fig. 2. Continue with step 9.

FIG. 1

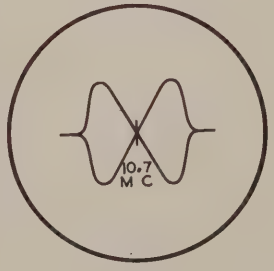

FIG. 2

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	150Ω Resistor in series with each gen lead.	High side to FM ant. term. Low side to chassis.	108.0MC (Unmodulated).	FM	Tuning condenser fully open. (108.0MC)	Connect DC probe to Point "A". Common to chassis.	A14	Adjust for maximum output.
10.	150Ω Resistor in series with each gen lead.	"	106.0MC	"	Tune for maximum output.	"	A15	"

GOODELL
MODEL ATB-3

GOODELL
MODEL ATB-3

GOODELL MODEL ATB-3

TRADE NAME	Goodell, Model ATB-3
MANUFACTURER	The Minnesota Electronics Corp., 97 E. 5th St., St. Paul, Minnesota.
TYPE SET TUBES (SIX)	AC Operated Audio Amplifier. Types 6SN7GT AF Amp., (2) 6SJ7 Driver, (2) 6L6G or (2) 6B4G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.23 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SN7GT	0V	115VDC	4.6VDC	50VDC	250VDC	75VDC	3VAC	3VAC
V 2	6SJ7	0V	3VAC	43VDC	33VDC	43VDC	117VDC	3VAC	167VDC
V 3	6SJ7	0V	3VAC	40VDC	30VDC	40VDC	110VDC	3VAC	150VDC
V 4	6L6G	0V	3VAC	430VDC	310VDC	0V	0V	3VAC	24VDC
V 5	6L6G	0V	3VAC	430VDC	310VDC	0V	0V	3VAC	24VDC
V 6	5U4G	0V	445VDC	0V	410VAC	0V	410VAC	0V	445VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SN7GT	3Ω	†150KΩ	2.5KΩ	500KΩ	†48KΩ	27KΩ	800Ω	800Ω
V 2	6SJ7	0Ω	800Ω	7KΩ	470KΩ	7KΩ	†450KΩ	800Ω	†120KΩ
V 3	6SJ7	0Ω	800Ω	7KΩ	470KΩ	7KΩ	†450KΩ	800Ω	†120KΩ
V 4	6L6G	0Ω	800Ω	†190Ω	†5.5KΩ	250KΩ	240KΩ	800Ω	220Ω
V 5	6L6G	0Ω	800Ω	†180Ω	†5.5KΩ	250KΩ	240KΩ	800Ω	220Ω
V 6	5U4G	Inf.	15KΩ	Inf.	30Ω	Inf.	32Ω	Inf.	15KΩ

† Measured from Pin 8 of V6.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at minimum, proper output load connected.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GOODELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	6SW7GT	6SW7GT	8BD	
V2	Driver	6SN7	6SN7	8N	
V3	Driver	6SN7	6SN7	8N	
V4A	Power Output	6L6G	6L6G	7AC	
B	Power Output	6B4G	6B4G	5S	
V5A	Power Output	6L6G	6L6G	7AC	
B	Power Output	6B4G	6B4G	5S	
V6	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GOODELL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	4	600		610-4	TLAD 6040		PC-46	Filter
C2	4	600		610-4	TLAD 6040		PC-46	Filter
C3	4	600		610-4	TLAD 6040		PC-46	Filter
C4A	40	450		AF862J4A	UP 43145C		EL-424	▲ AF Amp. Plate Dec.
B	30	450						■ Output Screen Dec.
C	10	450						▲ Decoupling
D	20	25						Output Cath. Bypass
C5A	40	450		AF862J4A	UP 43145C		EL-424	▲ Decoupling
B	30	450						■ Decoupling
C	10	450						▲ Decoupling
D	20	25						Output Cath. Bypass
C6	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C7	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C8	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C9	.0022	600		P688-0022	GT6D2	GP2M-002	TM-22	AF Amp. Cath. Bypass*
C10A	.5	600		630AT-2x.5	DYR6055		PBTT -550	Driver Screen Bypass*
B	.5	600						Driver Svreen Bypass
C11	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C12	.1	600		P688-1	GT6P1		TM-1	Audio Coupling
C13A	.1	600		630-2x.1	DYR6011		BP216	Filament Bypass
B	.1	600						Filament Bypass
C14A	.1	600		630-2x.1	DYR6011		BP216	Line Filter
B	.1	600						Line Filter

* Not Used In All Models.

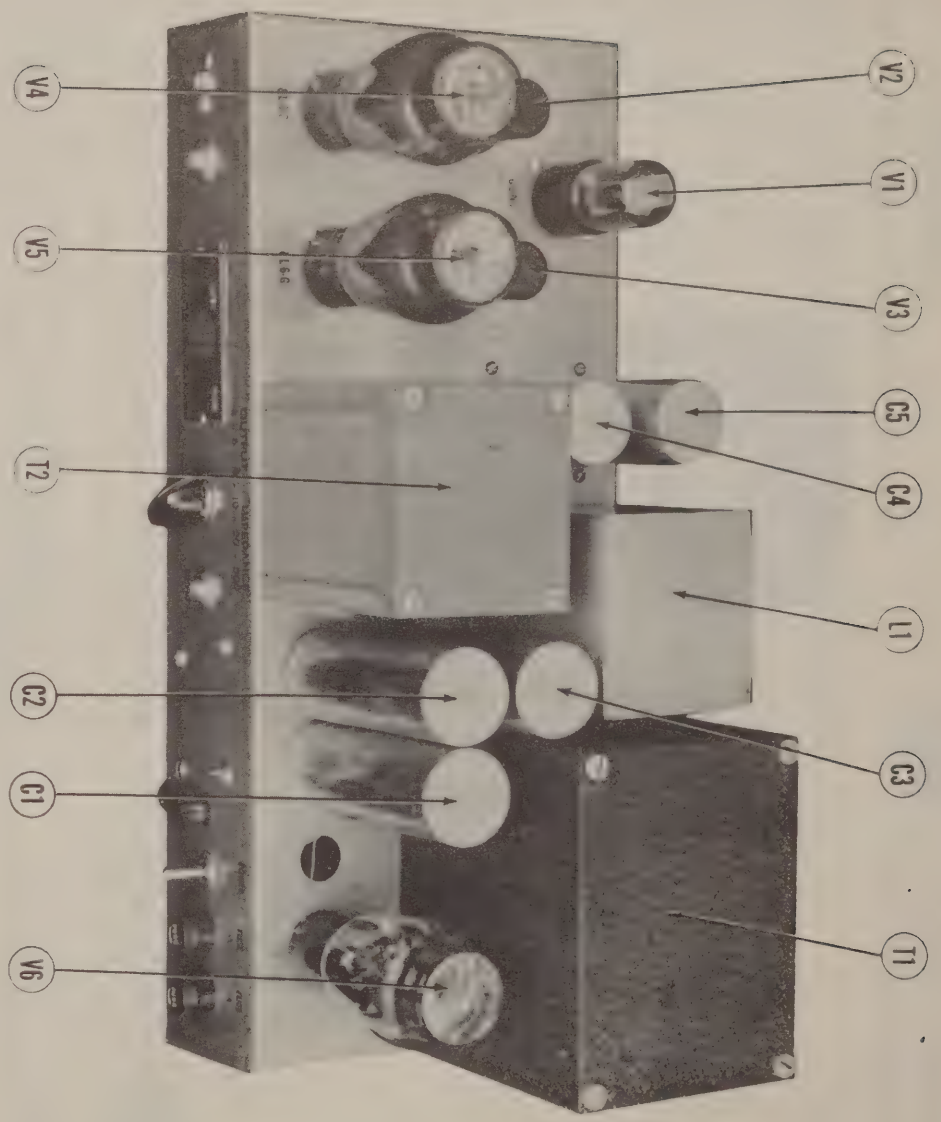
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GOODELL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	500KΩ	½		Q13-133	M-60-Z	Volume control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GOODELL PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	2700Ω	½		BTS-2700	AF Cathode	
R3	100KΩ	1		BTA-100K	AF Plate	
R4	470KΩ	½		BTS-470K	AF Grid	
R5	2700Ω	½		BTS-2700	AF Cathode	
R6	24KΩ	1		BTA-22K-5%	AF Cathode	5%
R7	24KΩ	1		BTA-22K-5%	AF Plate	5%
R8	24KΩ	1		BTA-22K-5%	Filter	5%
R9	24KΩ	1		BTA-22K-5%	Filter	5%

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GOODELL PART No.	IRC PART No.	
R10	470KΩ	½		BTS-470K	Driver Grid
R11	560Ω	½		BTS-560	Driver Cathode
R12	6800Ω	1		BTA-6800	Driver Cathode
R13	430KΩ	½		BTS-470K	Driver Screen
R14	100KΩ	1		BTA-100K	Driver Plate
R15	24KΩ	1		BTA-22K-5%	Filter 5%
R16	470KΩ	½		BTS-470K	Driver Grid
R17	560Ω	½		BTS-560	Driver Cathode
R18	6800Ω	1		BTA-6800	Driver Cathode
R19	430KΩ	½		BTS-470K	Driver Screen
R20	100KΩ	1		BTA-100K	Driver Plate
R21	100KΩ	5			Feed Back See Note 1
R22	10KΩ	½		BTS-10K	Output Grid
R23	240KΩ	½		BTS-220K-5%	Output Grid 5%
R24	220Ω	5		AB-225	Output Cathode Wire Wound
R25	10KΩ	½		BTS-10K	Output Grid
R26	240KΩ	½		BTS-220K-5%	Output Grid 5%
R27	100KΩ	5			Feed Back See Note 1
R28	68KΩ	1		BTA-68K	Feed Back
R29	330KΩ	½		BTS-330K	Feed Back 5%
R30	25KΩ	100		HAA-25K	Bleeder Wire Wound See Note 2
R31	47Ω	2		BW-2-47	Voltage Divider
R32	47Ω	2		BW-2-47	Voltage Divider
R33	750Ω	10		AB-750	Voltage Divider Wire Wound

Note 1. - Use Four 24KΩ, 1 Watt Resistors In Series To Obtain Correct Resistance And Wattage.

Note 2. - Adjust Metal Band To 20KΩ From Ground End Of Resistor.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GOODELL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 1.23A	840VCT .143A DC	5VAC @ 3A	6.3VAC @ 3.2A	A6299	P-4081†	PV-200†	P-3155†

† Drill New Mtg. Holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GOODELL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5KΩ CT	4Ω 6Ω 8Ω 10Ω 20Ω 500Ω	240Ω CT	1.2Ω 1.5Ω 1.65Ω 1.8Ω 2.3Ω 45Ω	A-6205	A-3801†	PCO-80†	A-3130†	† Drill New Mtg. Holes.

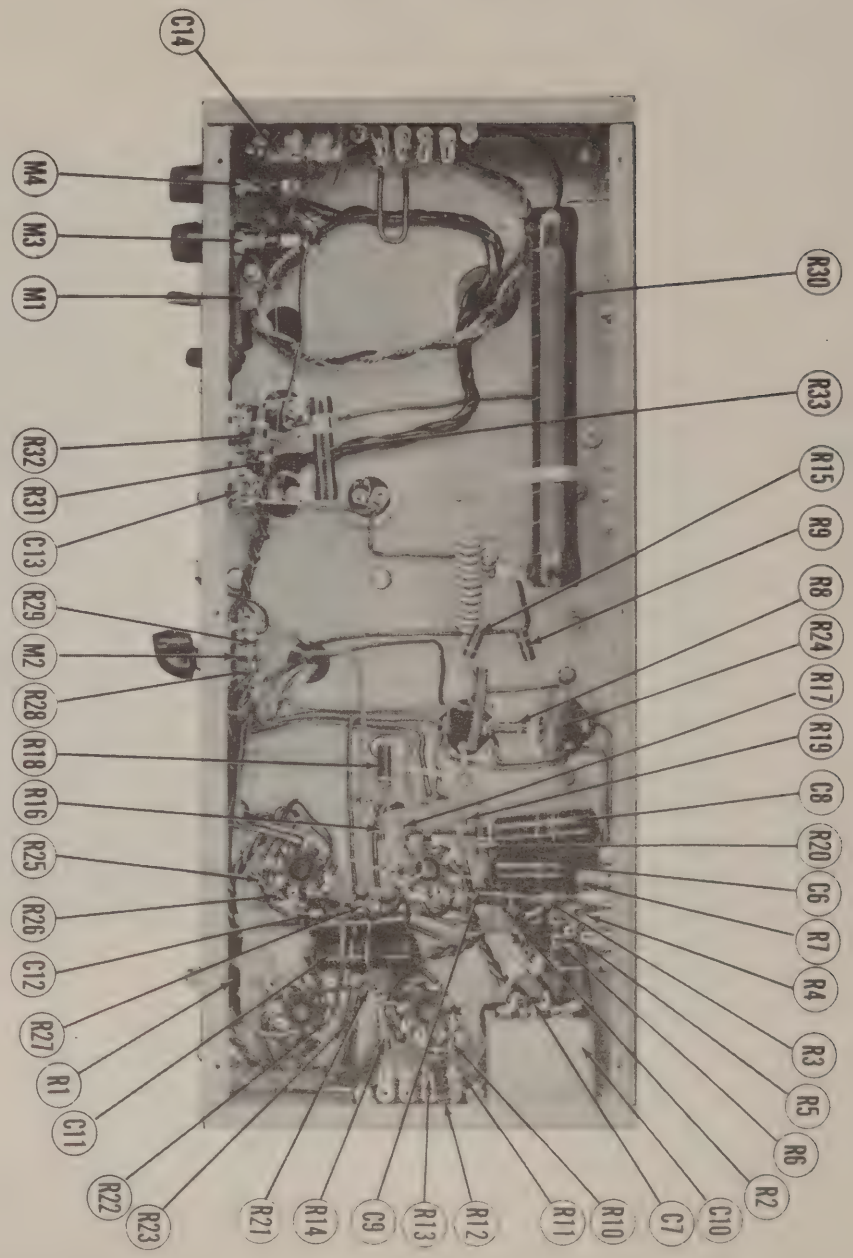
FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	GOODELL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.1.25A	72Ω	4.8 Henries		C-1411†	RS-8150	C-3196	† Drill New Mtg. Holes.

MISCELLANEOUS

ITEM No.	PART NAME	GOODELL PART No.	NOTES
M1	Switch		On-Off
M2	Switch		Output Selector
M3	Fuse		.5 Amp.
M4	Fuse		4 Amp.

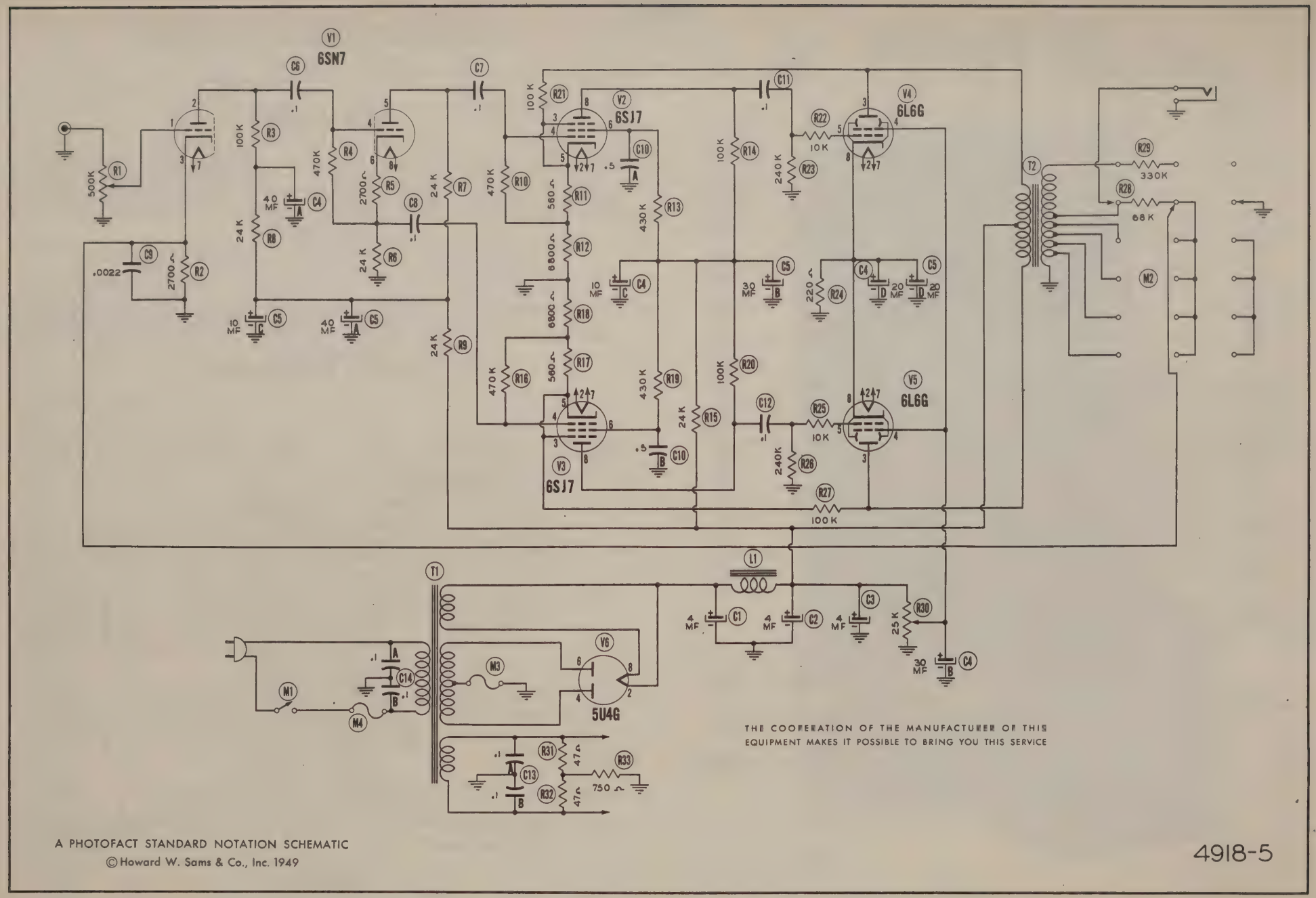
CHASSIS—BOTTOM VIEW



DATE 9/49 4918-5 SET #70 FOLDER #5

GOODELL MODEL ATB-3

GOODELL MODEL ATB-3



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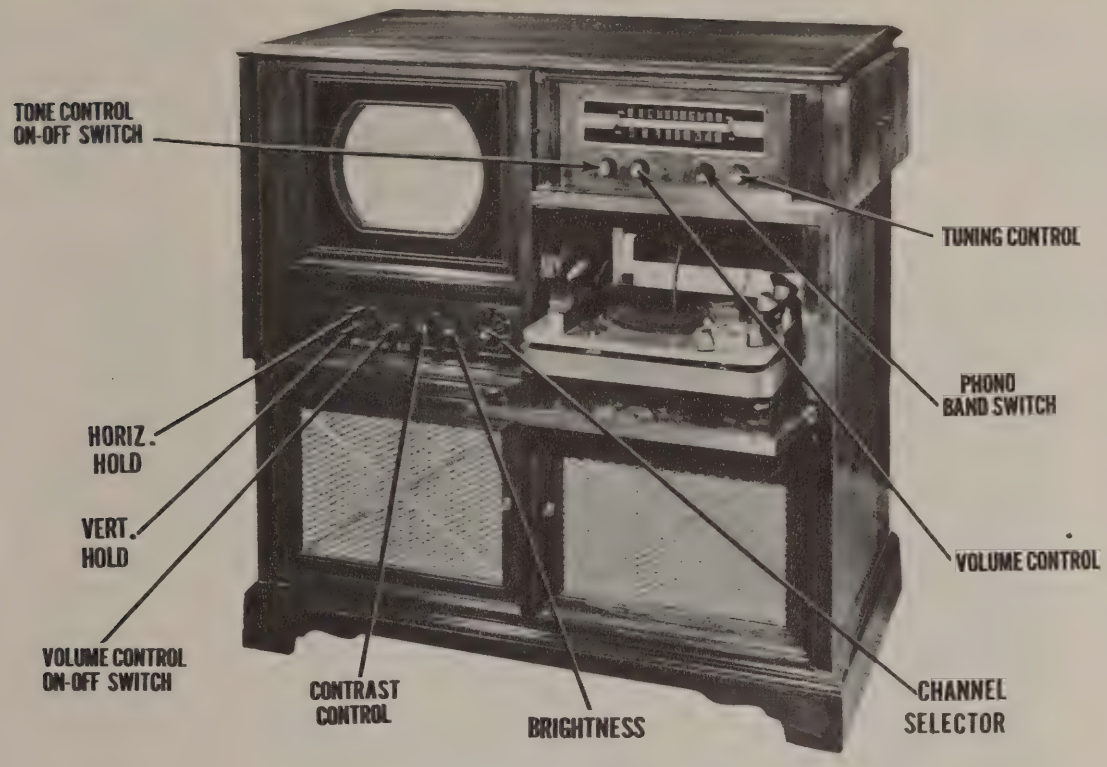
MODELS 49-1150, 49-1175



PHILCO MODEL 49-1175

TRADE NAME	Philco, Models 49-1150, 49-1175
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.
TYPE SET	Model 49-1150 TV only. Model 49-1175 AM-FM-Phono-TV
TUBES	Twenty Five-Model 49-1150 Thirty Two-Model 49-1175
POWER SUPPLY	110-120 Volts AC
TUNING RANGE	TV Channels 2 thru 13 AM 540-1620KC FM 88-108MC
RATING:	(TV) 2.0 Amp. @ 117 Volts AC (Radio) .55 Amp. @ 117 Volts AC

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DATE 9/49 4918-6 SET #70 FOLDER 6

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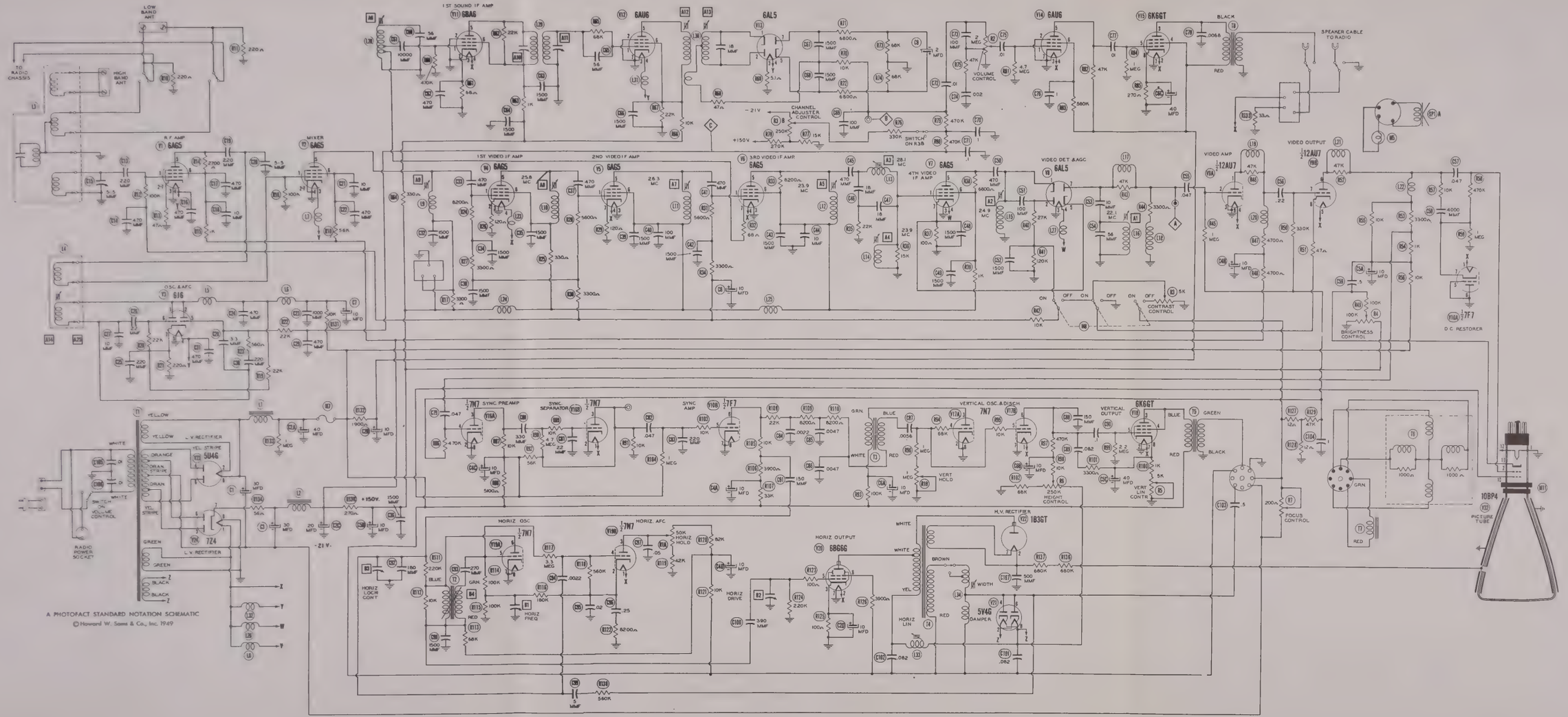
MODELS 49-1150, 49-1175



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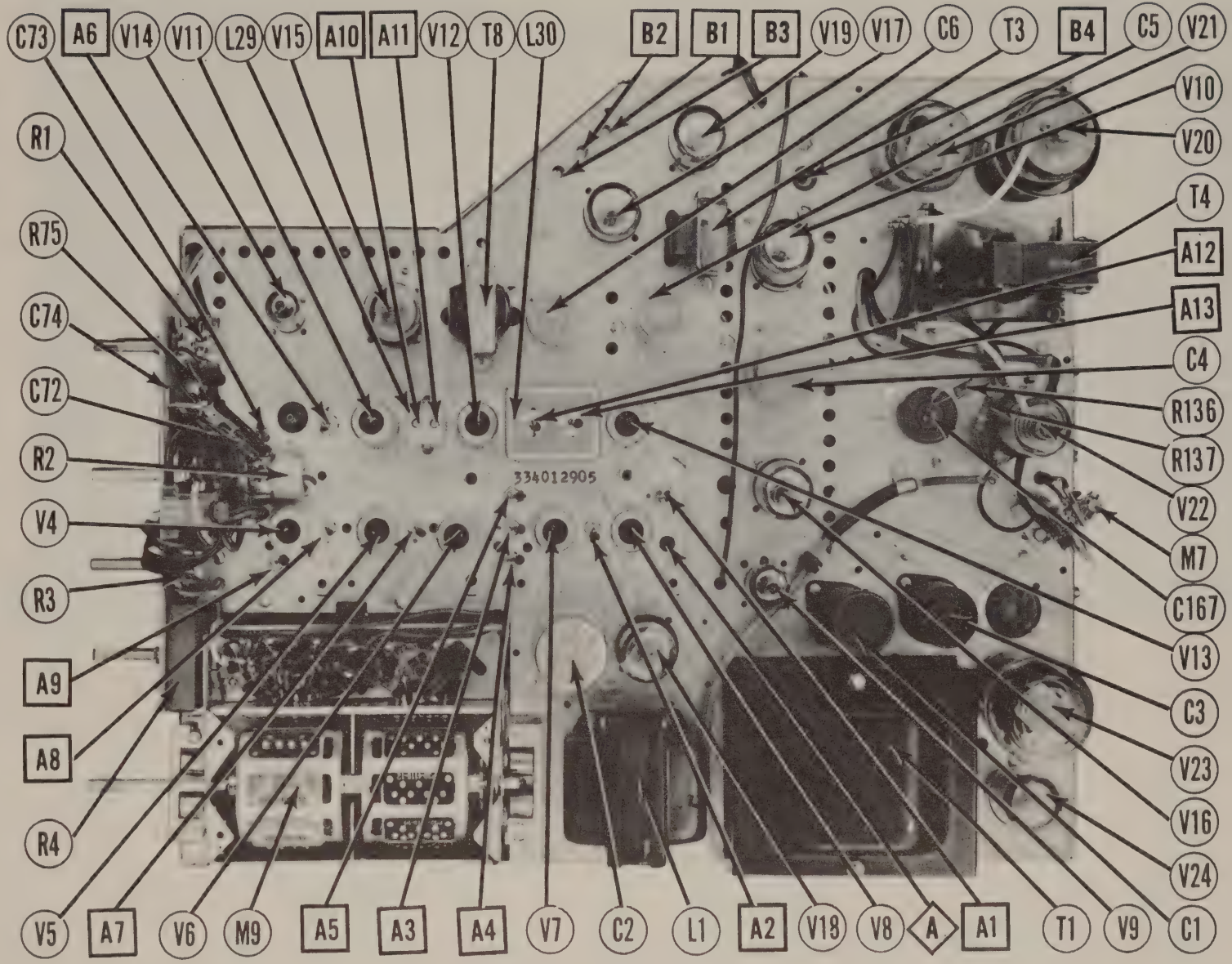
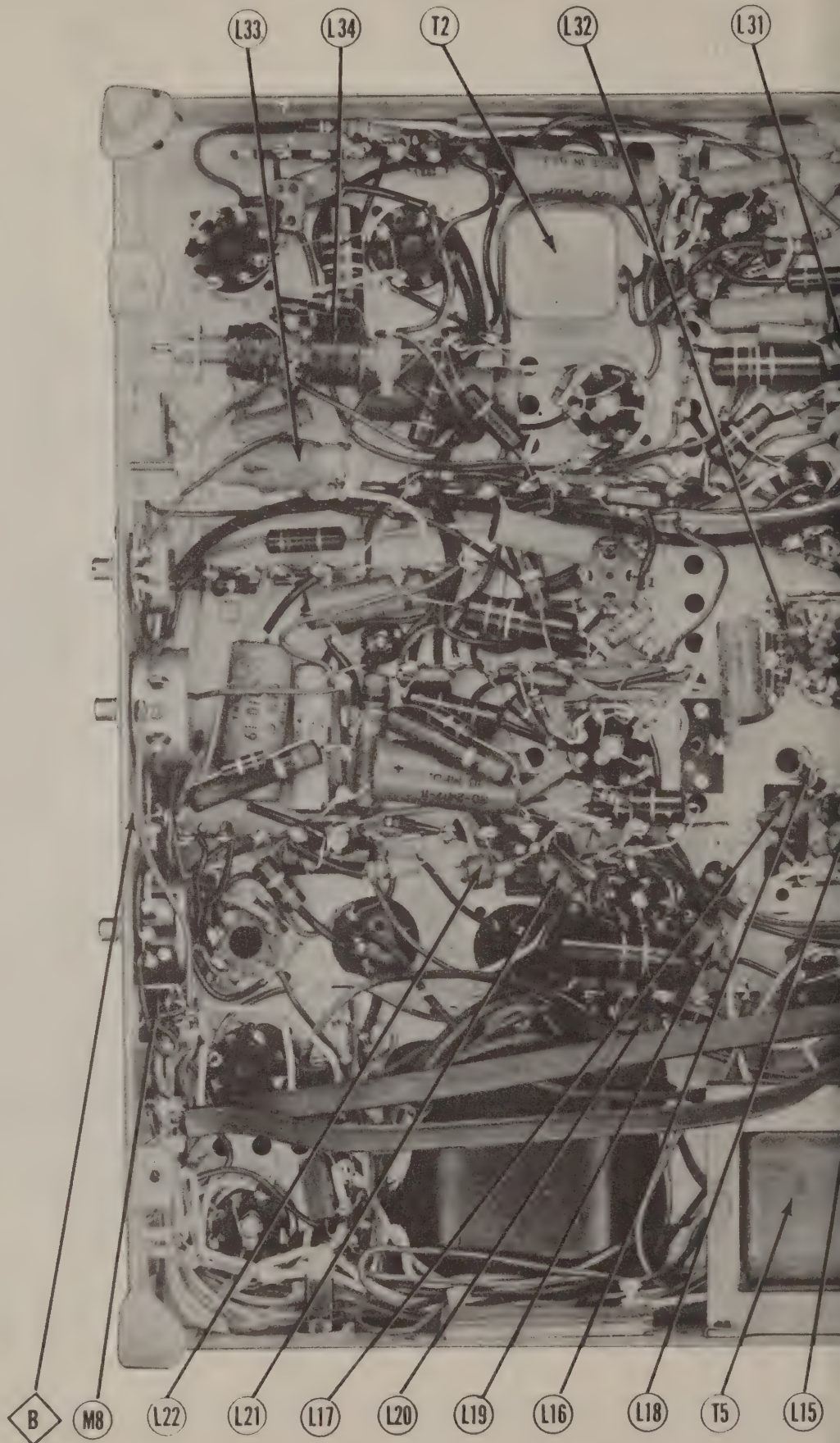
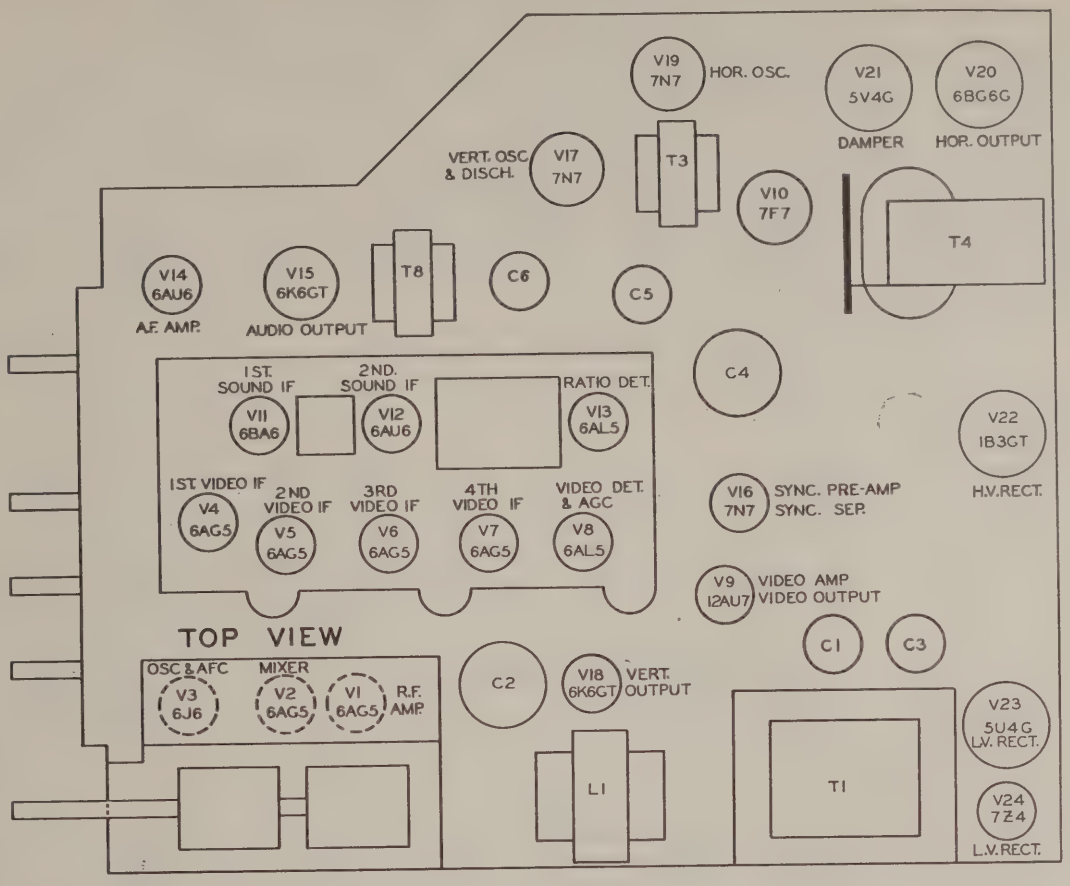
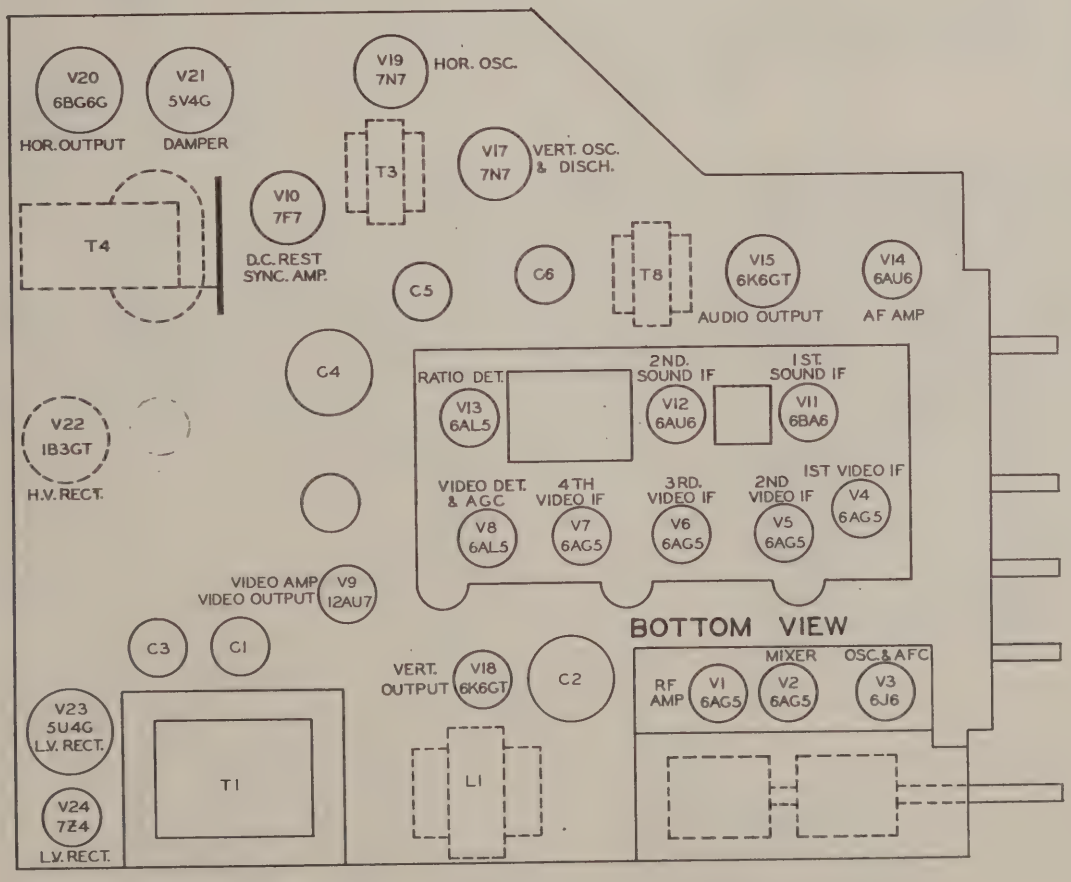


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDU





TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the AVC switch to the "off" position and set the contrast control at approximately 3/4 of its rotation in the clockwise direction.

Pull the horizontal oscillator tube (7N7-V19) to eliminate the high voltage shock hazard during the alignment procedure.

VIDEO IF ALIGNMENT

Remove the oscillator tube (6J6-V3) and remove the oscillator clip coil of any channel from the turret and switch the tuner to that channel.

Use an ungrounded tube shield over the mixer tube as a means of injecting the signal.

Attenuate the signal generator so as not to exceed 2 volts on the VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Tube Shield	High side to ungrounded tube shield over mixer tube (V2). Low side to chassis.	22.1MC (Unmod.)	Any	DC Probe to Point (A) Common to chassis.	A1	Adjust for minimum deflection.
2.	Tube Shield	"	24.9MC (Unmod.)	"	"	A2	Adjust for maximum deflection.
3.	Tube Shield	"	28.1MC (Unmod.)	"	"	A3	Adjust for minimum deflection.
4.	Tube Shield	"	23.9MC (Unmod.)	"	"	A4,A5	Adjust for maximum deflection.
5.	Tube Shield	"	22.1MC (Unmod.)	"	"	A6	Adjust for minimum deflection.
6.	Tube Shield	"	26.3MC (Unmod.)	"	"	A7	Adjust for maximum deflection.
7.	Tube Shield	"	25.8MC (Unmod.)	"	"	A8	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Tube Shield	High side to ungrounded tube shield over mixer tube (V2). Low side to chassis.	25MC (10MC Sweep)	22.1MC 26.6MC 28.1MC	Any	Vert. Amp. thru 10KΩ resistor to point (A) Low side to chassis.	A1,A2, A3,A4, A5,A6, A7,A8, A9	Adjust for pattern and placement of markers as per Fig 1.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Tube Shield	High side to ungrounded tube shield over mixer tube (V2). Low side to chassis.	22.1MC (1MC Sweep)	22.1MC	Any	Vert. Amp. thru 10KΩ resistor to Point (B) Low side to chassis.	A10,A11	Adjust for maximum indications.
10.	Tube Shield	"	"	"	"	"	A12,A13	Adjust A12 for maximum amplitude and straightness of diagonal line going from peak to peak. Adjust A13 so 22.1MC marker is located at center of diagonal line as per Fig 2. Replace oscillator tube (V3).

OSCILLATOR ALIGNMENT

The oscillator alignment should not be attempted until the sound IF channel has been accurately aligned.

The tuner of this receiver will receiver eight of the twelve available channels. The eight received will depend upon the coils which are in the tuner. Do not attempt to align a coil set for any channel other than that which it is intended. The alignment outline below lists the sound carrier frequencies for all twelve channels.

Disable the AFC system during the oscillator alignment by temporarily grounding Point C.

The oscillator coil slug adjustments are available through the hole in the front panel of the chassis. As each channel is switched in, the oscillator coil slug for that channel is in line with the hole in front of the chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	Two 125Ω carbon res.	Across high band antenna terminals with 125Ω resistor in each generator lead.	215.75MC	13	DC Probe to Point (B) Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
12.	"	"	209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC	12 11 10 9 8 7	"	A15 A16 A17 A18 A19 A20	"
13.	"	Across low band antenna terminals with 125Ω resistor in each generator lead.	87.75MC 81.75MC 71.75MC 65.75MC 59.75MC	6 5 4 3 2	"	A21 A22 A23 A24 A25	"

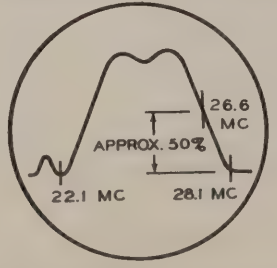


FIG. 1

FIG. 2

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If alignment is to be done on both FM and AM bands, the AM alignment should be done first.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
The calibration points should be marked by pencil on the dial backplate when the receiver is removed from the cabinet. The reference point from which the measurements are made is the left hand edge of the dial backplate. Pointer setting with tuning gang closed 3 11/16", 1500KC-9 1/16", 1600KC-9 7/16", 92MC-5 5/16", and 105MC-8 7/16".

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14	.1MFD	High side to terminal #1 of AM antenna terminal strip. Low side to B-.	455KC	AM	540KC	Across terminal #2 & #3 on AM antenna terminal strip	A26, A27, A28, A29, A30, A31	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001MFD to reduce hum modulation. Do not repeat adjustments.
15		Loop	1600KC	"	1600KC	"	A32	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
16		Loop	1500KC	"	1500KC	"	A33	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ resistor (± 5%) in series from pin 2 of 19T8 (V30) to chassis. The junction of these resistors is alignment Point E as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
17	.1MFD	High side to pin 1 (Grid) of 6BJ6 (V28). Low side to B-.	9.1MC (Unmod.)	FM	88MC	DC Probe to Point (D). Common to B-.	A34, A35, A36	Adjust for maximum deflection.
18	.1MFD	High side to pin 8 (Grid) of 7F8 (V26). Low side to B-.	"	"	"	"	A37, A38	" " " "
19	.1MFD	"	"	"	"	DC Probe to Point (E). Common to Point (F)	A39	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
17	.1MFD	High side to pin 1 (Grid) of 6BJ6 (V28). Low side to B-.	9.1MC (450KC Sweep)	FM	88MC	Vert. Amp. to Point (D) Low side to B-.	A34, A35, A36	Disconnect stabilizer cap. (C12). Adjust for maximum amplitude and symmetry as per Fig 3.
18	.1MFD	High side to pin 8 (Grid) of 7F8 (V26). Low side to B-.	"	"	"	"	A37, A38	"
19	.1MFD	"	"	"	"	Vert. Amp. to Point (F) Low side to B-.	A39	Reconnect stabilizer cap (C12). Adjust so crossover point occurs at center of pattern as per Fig 4. Slightly, retouch A34 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20	Two 125Ω carbon res.	Across pins 1 and 4 of FM antenna socket with 125Ω resistor in each generator lead.	105MC	FM	105MC	DC Probe to Point (D). Common to B-.	A40	Adjust for maximum deflection.
21	"	"	"	"	"	"	A41, A42	Rock tuning gang and adjust for maximum deflection.
22	"	"	92MC	"	92MC	"	L40, L37, L35	Expand or compress the coil turns, which ever is necessary, until the insertion of either end of a tuning wand will cause a decrease in the VTVM reading. Repeat steps 20, 21, and 22 until no further improvement can be made.

FIG. 3

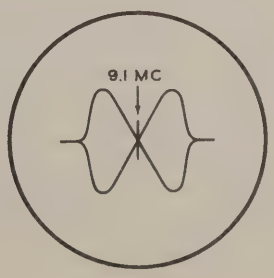


FIG. 4

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	0V	.5VDC	0V	6.3VAC	120VDC	137VDC	.5VDC		
V 2	6AG5	0V	0V	6.3VAC	0V	130VDC	75VDC	0V		
V 3	6J6	85VDC	85VDC	0V	6.3VAC	.1VDC	§2VDC	2.5VDC		
V 4	6AG5	-2.8VDC	1.1VDC	0V	6.3VAC	125VDC	125VDC	1.1VDC		
V 5	6AG5	-.6VDC	1.1VDC	0V	6.3VAC	127VDC	127VDC	1.1VDC		
V 6	6AG5	-.3VDC	1VDC	0V	6.3VAC	127VDC	127VDC	1VDC		
V 7	6AG5	0V	1VDC	0V	6.3VAC	77VDC	125VDC	1VDC		
V 8	6AL5	0V	-3.6VDC	0V	6.3VAC	1.1VDC	0V	-2VDC		
V 9	12AU7	115VDC	-.7VDC	0V	6.3VAC	6.3VAC	300VDC	-1VDC	12.5VAC	
V 10	7F7	6.3VAC	0V	147VDC	.7VDC	0V	0V	.5VDC	0V	
V 11	6BA6	0V	0V	0V	6.3VAC	110VDC	110VDC	1.1VDC		
V 12	6AU6	-.4VDC	0V	0V	6.3VAC	50VDC	50VDC	0V		
V 13	6AL5	.1VDC	.1VDC	.8VDC	6.3VAC	10VDC	0V	-8.9VDC		
V 14	6AU6	-.5VDC	0V	0V	6.3VDC	187VDC	37VDC	0V		
V 15	6K6GT	0V	6.3VAC	217VDC	240VDC	0V	0V	0V	0V	
V 16	7N7	6.3VAC	0V	160VAC	-1VDC	-.5VDC	32VDC	0V	0V	
V 17	7N7	6.3VAC	0V	320VDC	-75VDC	-77VDC	450VDC 250VDC	0V	0V	
V 18	6K6GT	0V	0V	320VDC	320VDC	0V	6.3VAC	6.3VAC	28VDC 45VDC	
V 19	7N7	6.3VAC	9VDC	135VDC	-.4VDC	-1.6VDC	140VDC	0V	0V	
V 20	6BG6	0V	6.3VAC	9.3VDC	0V	-.2VDC	310VDC	0V	245VDC	*
V 21	5U4	0V	415VDC	0V	320VDC	0V	320VDC	0V	415VDC	
V 22	1B3GT	* DO NOT MEASURE.								
V 23	5U4G	0V	350VDC	0V	350VAC	0V	350VAC	0V	350VDC	
V 24	7Z4	6.3VAC	0V	230VAC	0V	0V	230VAC	165VDC	0V	
▲‡ V 25	12AU6	.4VDC	.7VDC	44VAC	55VDC	210VDC	165VDC	5VDC		▲‡
▲‡ V 26	14F8	§-1.3 VDC	32.5VAC	120VDC	3.2VDC	4.8VDC	107VDC	20VAC	2.5VDC	▲‡
▲V27	12AU7	41VDC	§-2VDC	2.9VDC	44VAC	32.5VAC	125VDC	0V	6.8VDC	
▲V28	6BJ6	0V	2.2VDC	55VDC	61VDC	145VDC	145VDC	1.7VDC		
▲V29	6BJ6	0V	.9VDC	61VDC	67VDC	200VDC	123VDC	0V		
▲‡ V 30	19T8	-.5VDC	-1.1VDC	-1.4VDC	0V	20VAC	-.7VDC	0V	-.7VDC	65VDC ▲‡
▲V31	50C6G	0V	117VAC	200VDC	157VDC	0V	0V	67VAC	12.5VDC	
V32	10BP4	0V	.2VDC	PIN 10 250VDC	PIN 11 125VDC	PIN 12 6.3VDC				

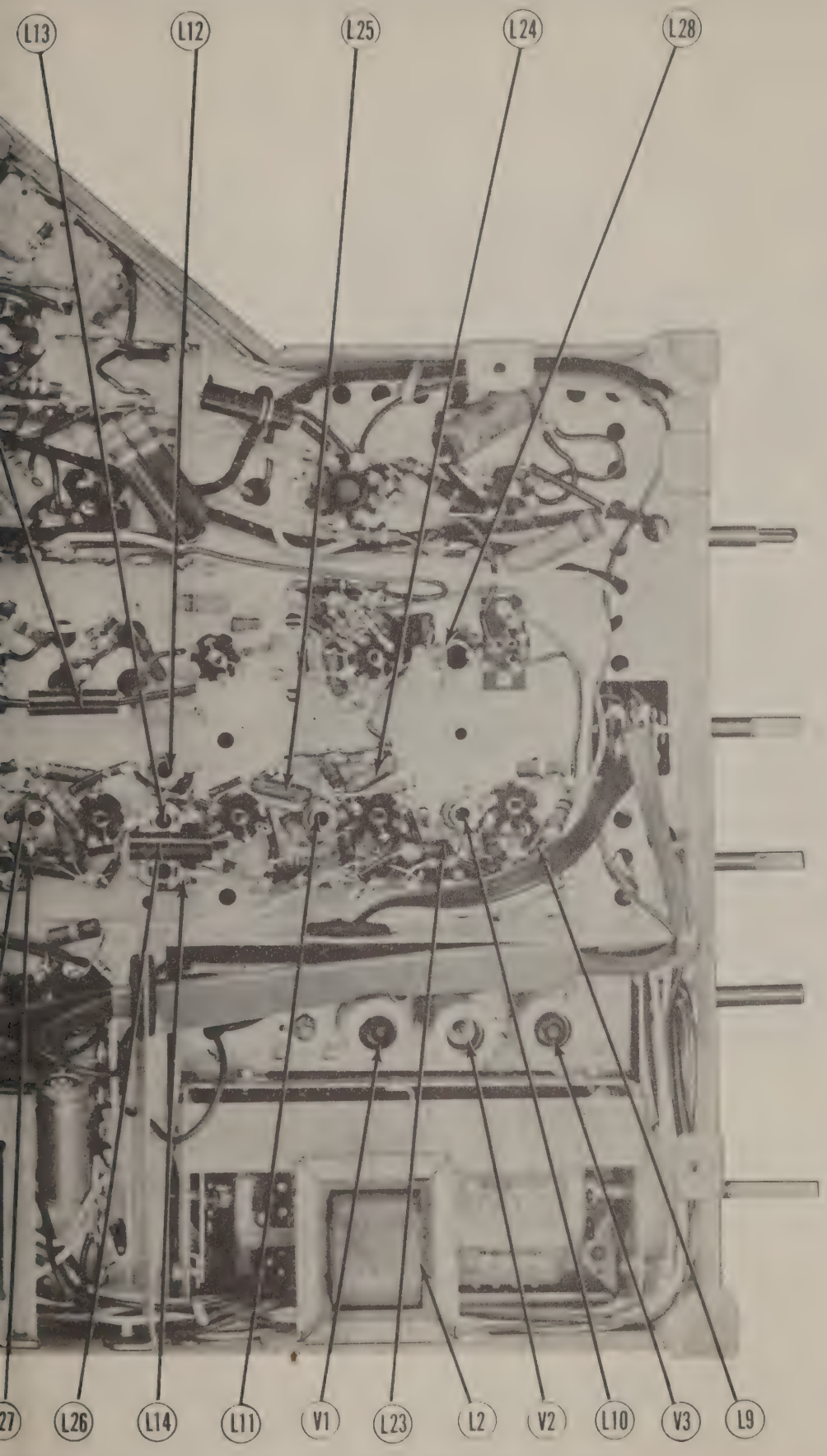
* Do Not Measure.
▲ B - Line At Switch Used As Negative.

RESISTANCE READINGS

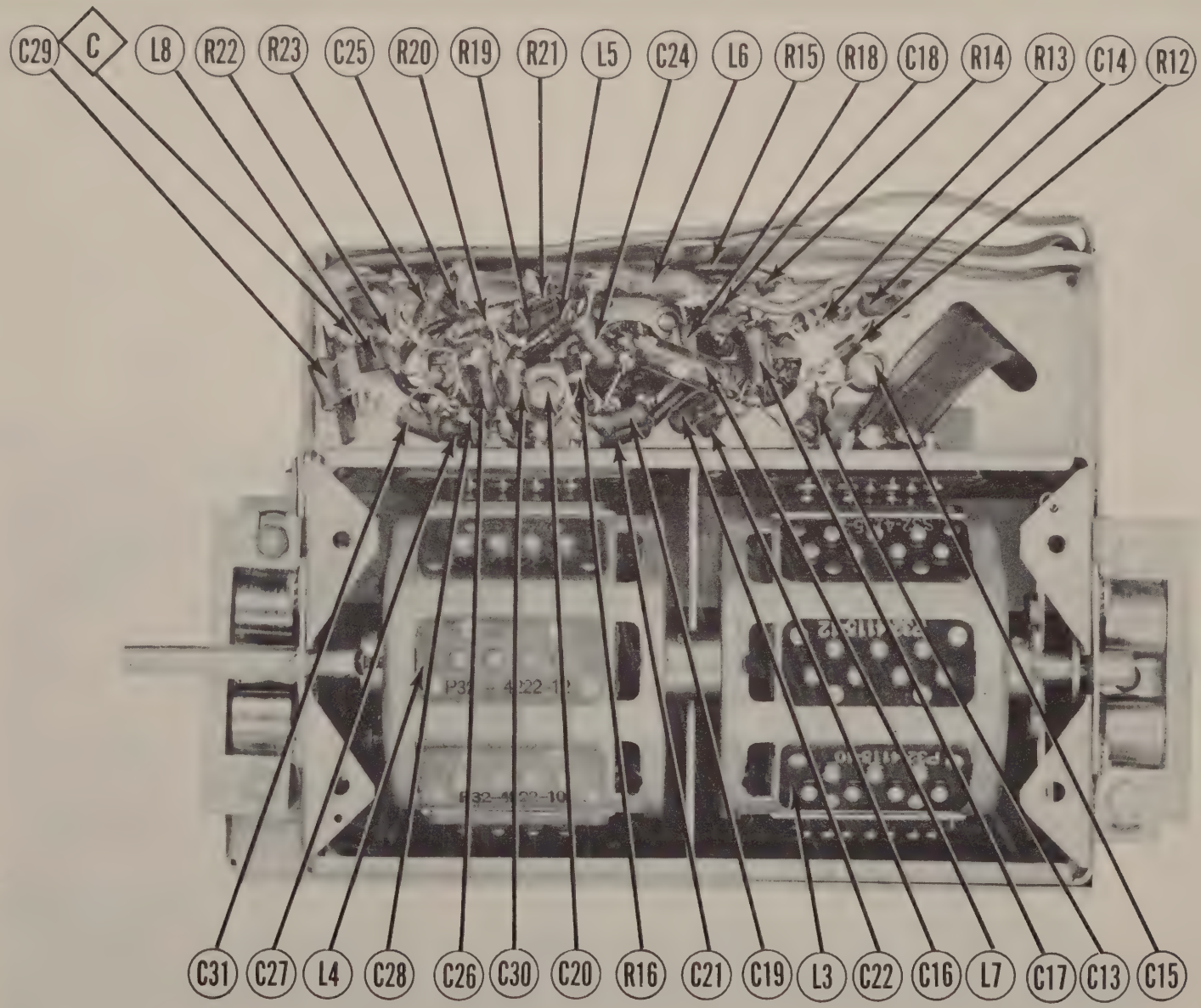
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	220KΩ	47Ω	0Ω	.1Ω	†4KΩ	†1000Ω	47Ω		
V 2	6AG5	100KΩ	0Ω	.1Ω	0Ω	†4KΩ	†60KΩ	0Ω		
V 3	6J6	♯8KΩ	♯8KΩ	0Ω	.1Ω	Inf.	22KΩ	220Ω		
V 4	6AG5	145KΩ	120Ω	0Ω	.1Ω	†800Ω	†800Ω	120Ω		
V 5	6AG5	145KΩ	120Ω	0Ω	.1Ω	†470Ω	†470Ω	120Ω		
V 6	6AG5	145KΩ	70Ω	0Ω	.1Ω	†470Ω	†470Ω	70Ω		
V 7	6AG5	.1Ω	100Ω	0Ω	.1Ω	†8KΩ	†1.5KΩ	100Ω		
V 8	6AL5	.2Ω	120KΩ	0Ω	.1Ω	100Ω	Inf.	3.5KΩ		
V 9	12AU7	†9.5KΩ	1.1 Meg.	0Ω	.1Ω	.1Ω	♯14KΩ	330KΩ	5KΩ	0Ω
V 10	7F7	.1Ω	0Ω	♯47KΩ	1 Meg.	0Ω	0Ω	1 Meg.	0Ω	
V 11	6BA6	470KΩ	0Ω	0Ω	.1Ω	†1.8KΩ	†1.8KΩ	68Ω		
V 12	6AU6	68KΩ	0Ω	0Ω	.1Ω	†10KΩ	†10KΩ	0Ω		
V 13	6AL5	Inf.	Inf.	1.8Ω	.1Ω	74KΩ	Inf.	74KΩ		
V 14	6AU6	4.7 Meg.	0Ω	0Ω	.1Ω	♯48KΩ	♯560KΩ	0Ω		
V 15	6K6GT	Inf.	.1Ω	♯2.5KΩ	♯2KΩ	1 Meg.	Inf.	0Ω	270Ω	
V 16	7N7	.1Ω	0Ω	♯15KΩ	470KΩ	5 Meg.	♯23KΩ	0Ω	0Ω	
V 17	7N7	.1Ω	0Ω	♯100KΩ	2 Meg.	2 Meg.	♦ 76KΩ 49KΩ	0Ω	0Ω	
V 18	6K6GT	Inf.	0Ω	♯750Ω	♯750Ω	2.2 Meg	.1Ω	.1Ω	5.5KΩ 500Ω	
V 19	7N7	.1Ω	280KΩ	♯45KΩ	750KΩ	200KΩ	♯80KΩ	0Ω	0Ω	
V 20	6BG6G	Inf.	.1Ω	100Ω	230KΩ	230KΩ	56KΩ	0Ω	♯4KΩ	♦53Ω
V 21	5V4G	Inf.	Inf.	Inf.	♯88Ω	Inf.	♯88Ω	Inf.	Inf.	
V 22	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	♦275Ω
V 23	5U4G	Inf.	19KΩ	Inf.	150Ω	Inf.	150Ω	Inf.	19KΩ	
V 24	7Z4	.1Ω	Inf.	150Ω	Inf.	Inf.	150Ω	19KΩ	0Ω	
V 25	12AU6	1 Meg.	200Ω	38Ω	48Ω	♦ 170Ω	♦ 15KΩ	320Ω		
V 26	14F8	15KΩ	30Ω	♦ 10KΩ	135Ω	1.5KΩ	♦ 20KΩ	20Ω	10KΩ	
▲V27	12AU7	♦ 42KΩ	15KΩ	135Ω	38Ω	30Ω	♦ 20KΩ	5 Meg.	1.5KΩ	
▲V28	6BJ6	5 Meg.	115Ω	48Ω	52Ω	♦ 4.5KΩ	♦ 4.5KΩ	68Ω		
▲V29	6BJ6	11Ω	68Ω	52Ω	58Ω	♦ 1000Ω	♦12.5KΩ	0Ω		
V 30	19T8	Inf.	47KΩ	Inf.	0Ω	18Ω	380KΩ	0Ω	10 Meg.	♦270KΩ
▲V31	50C6G	0Ω	80Ω	♦380Ω	♦3.2KΩ	470KΩ	0Ω	58Ω	220Ω	
V32	10BP4	0Ω	1.5 Meg.	PIN 10 5KΩ	PIN 11 150KΩ	PIN 12 .1Ω				

† Measured From Pin 7 Of V24.
♯ Measured From Pin 8 Of V23.
♦ Measured From Pin 8 Of V21.
♦ Measured From Output Of M2.
▲ B - Line At Switch Used As Negative.

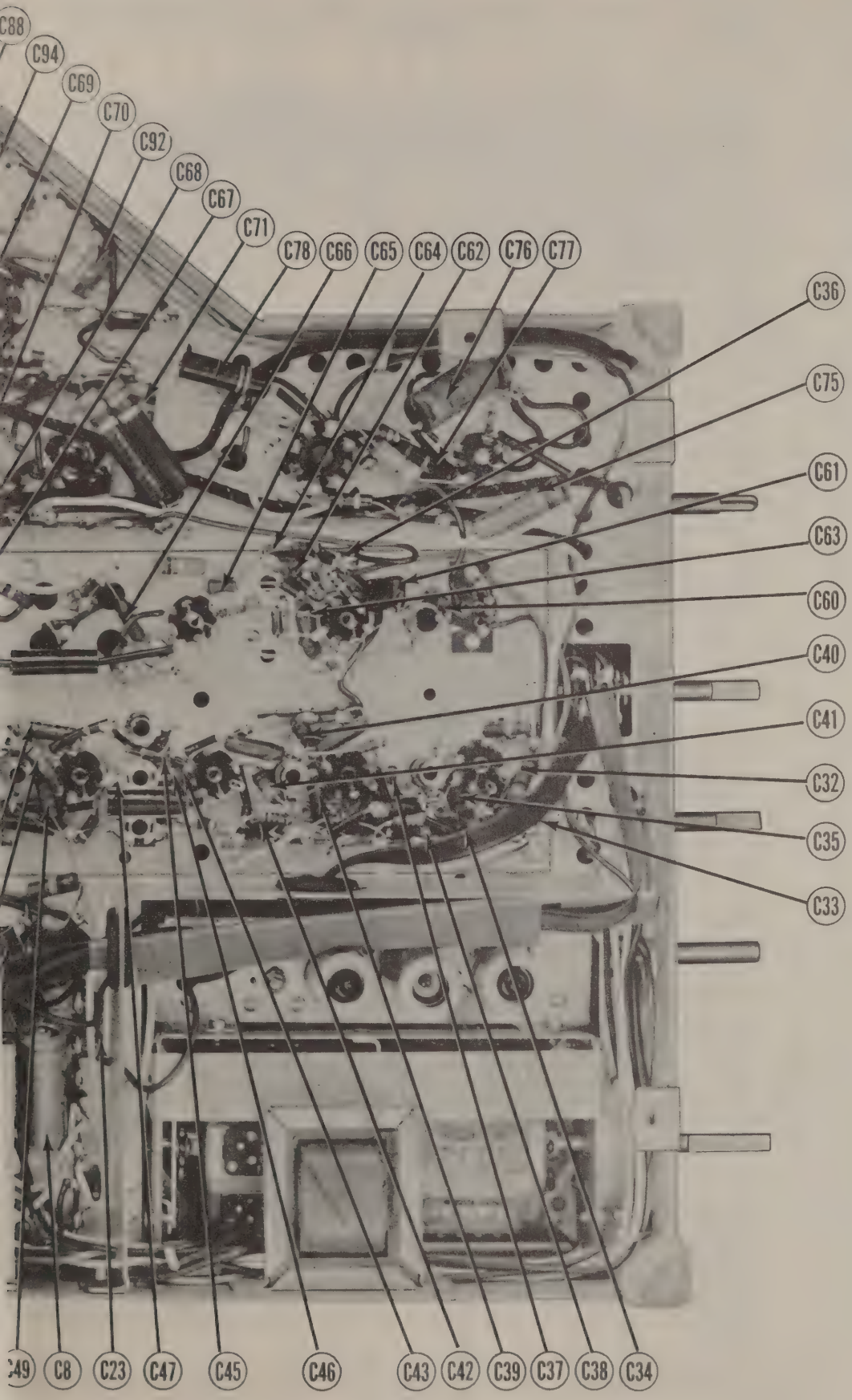
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



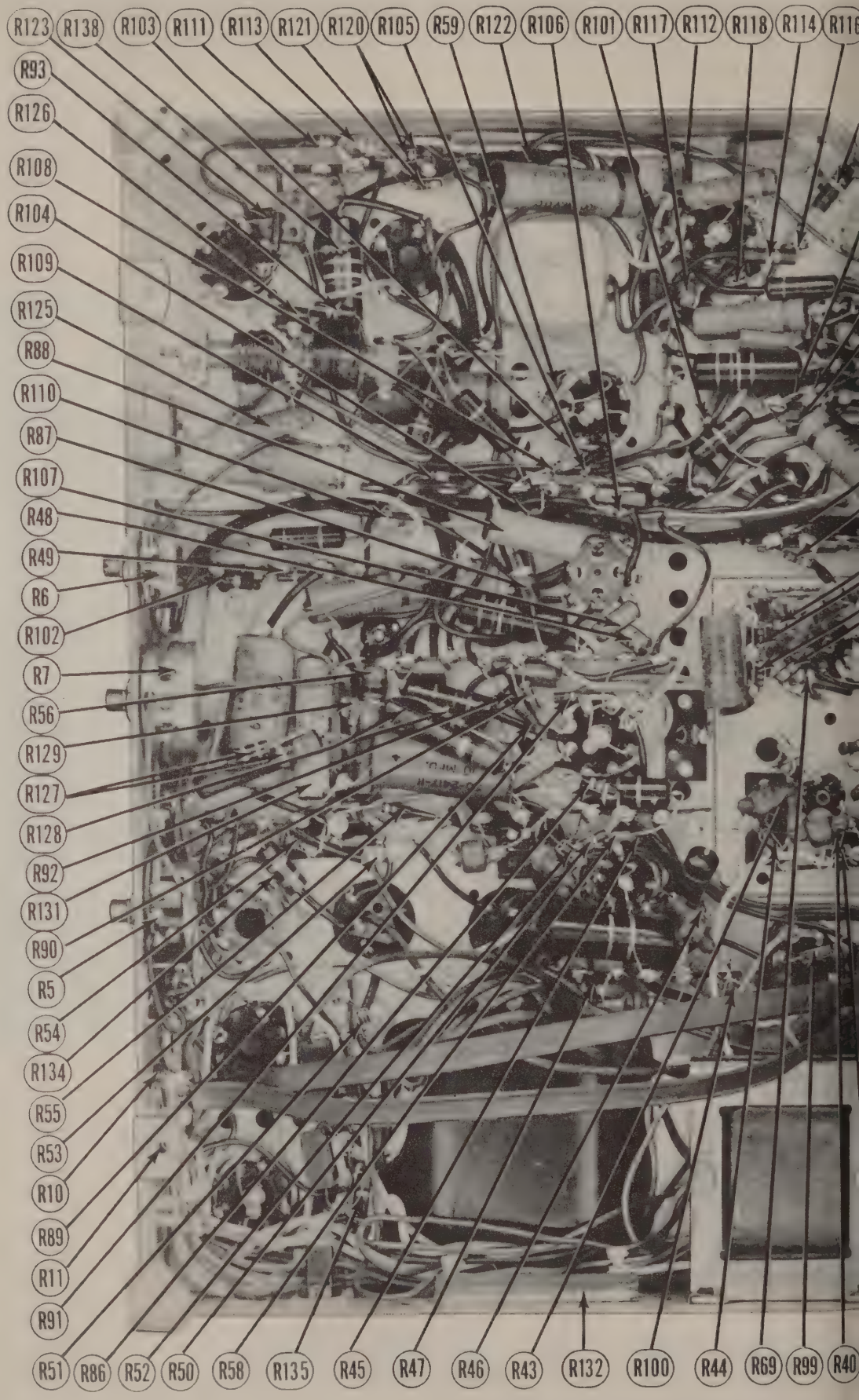
TOR AND ALIGNMENT IDENTIFICATION



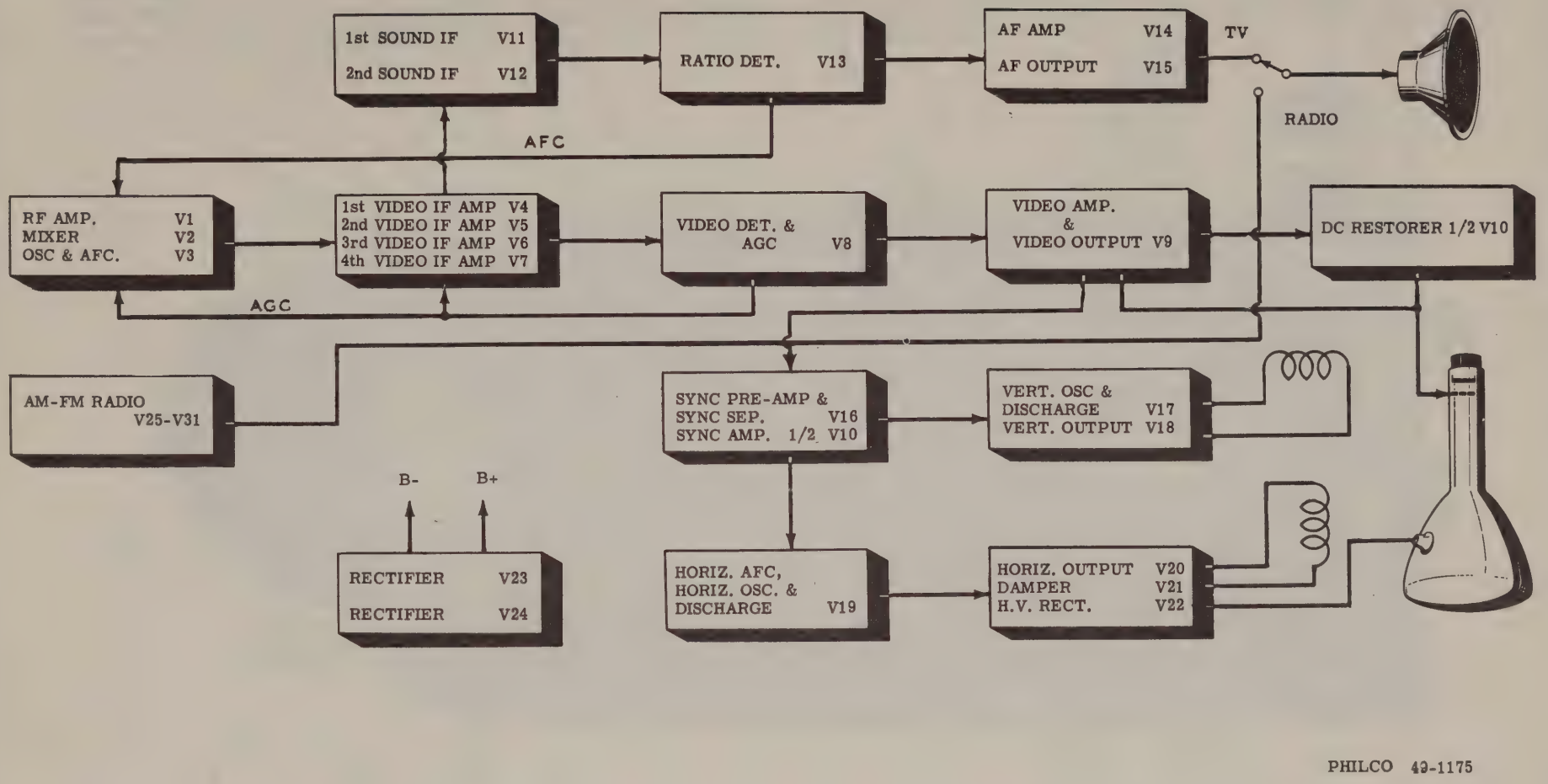
RF TUNER-BOTTOM VIEW



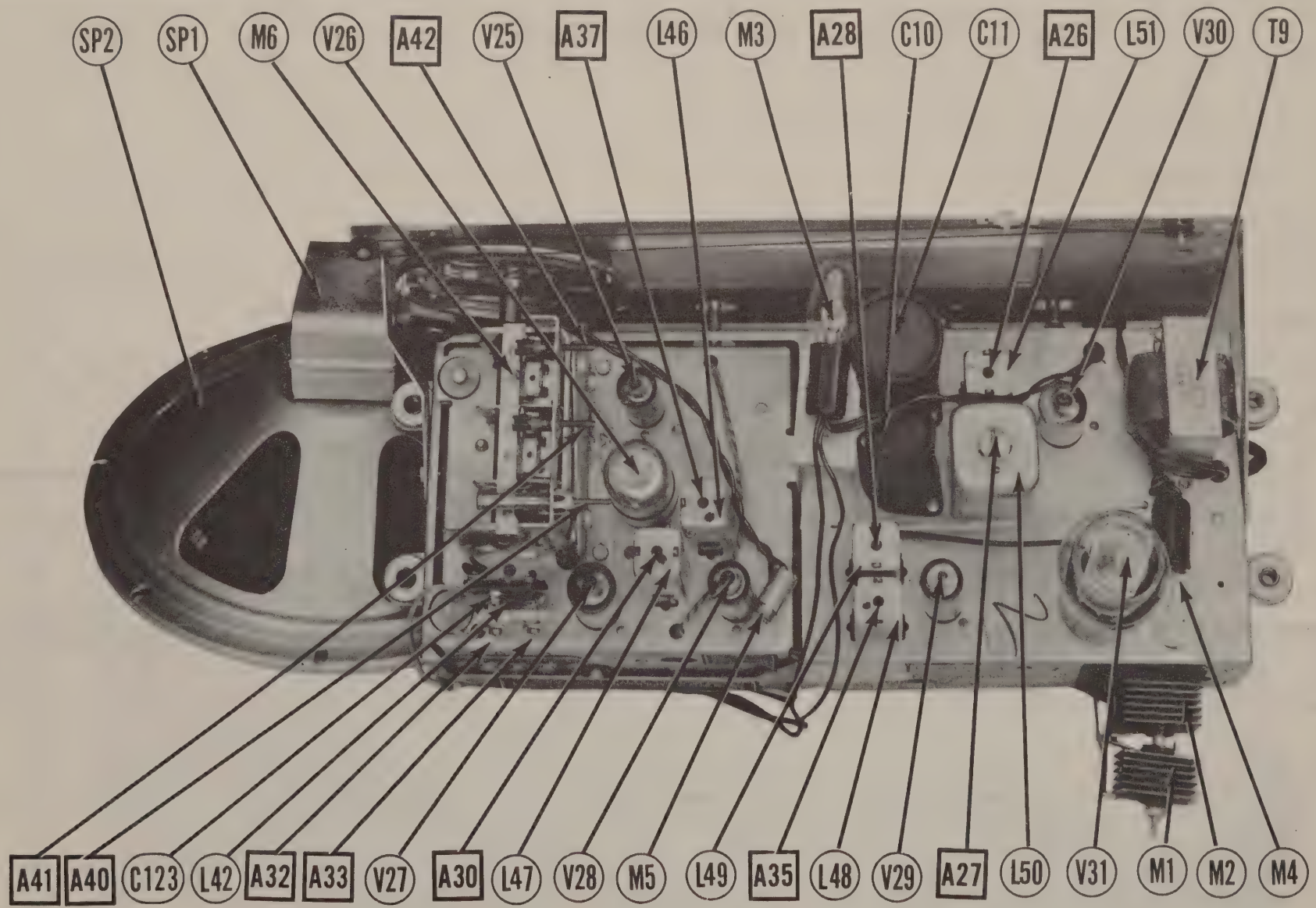
PACITOR IDENTIFICATION



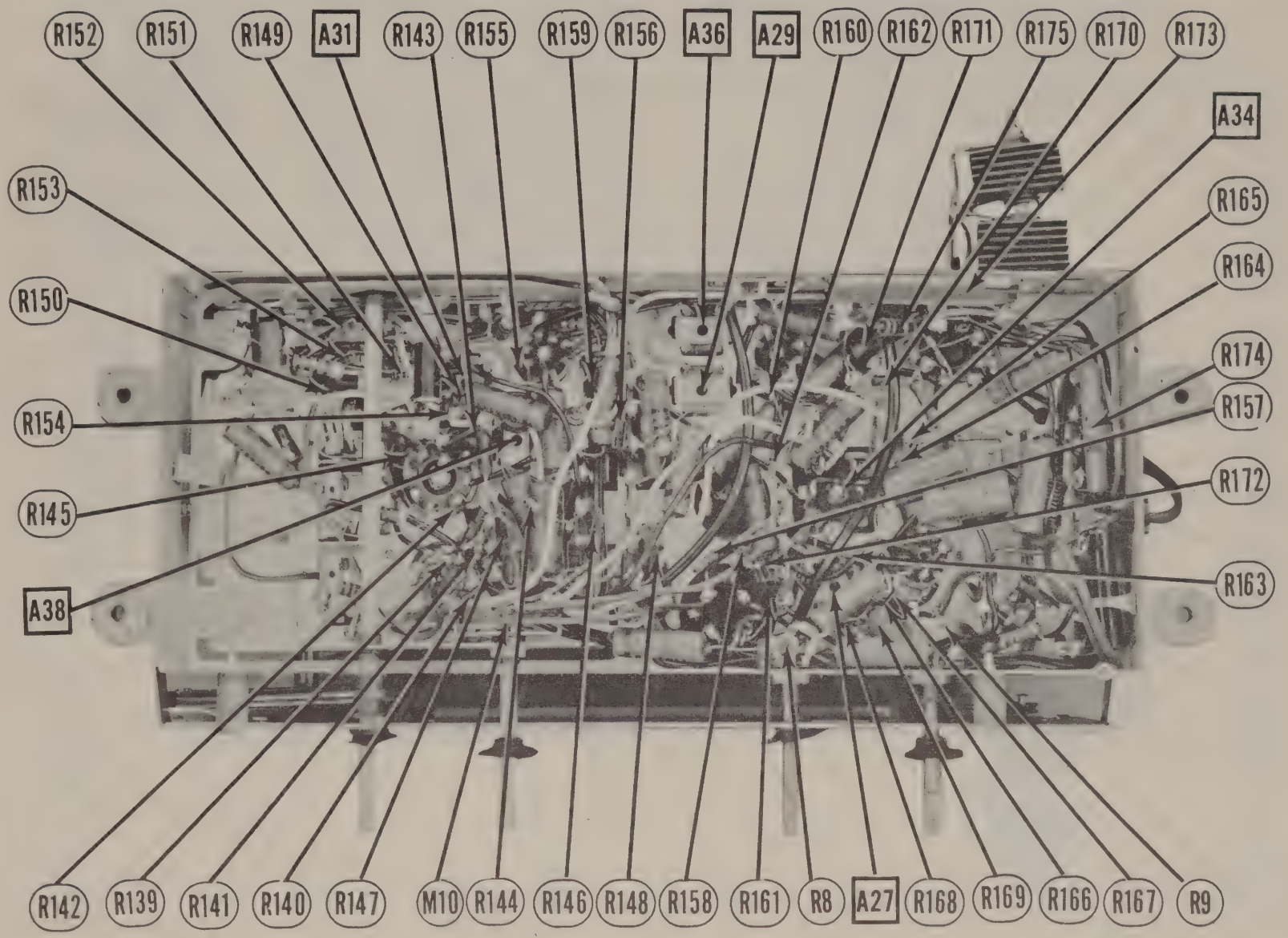
CHASSIS BOTTOM VIEW-



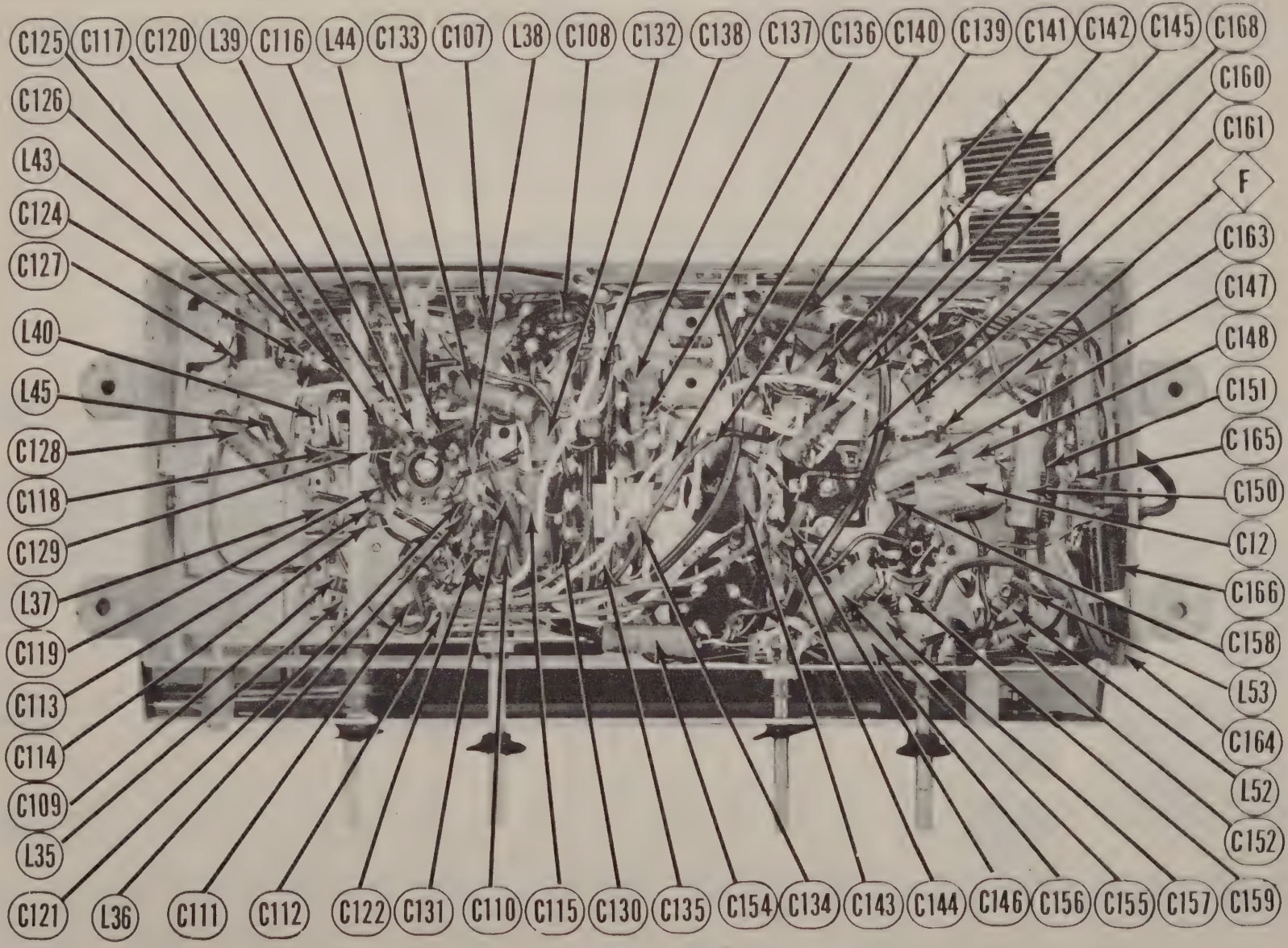
BLOCK DIAGRAM



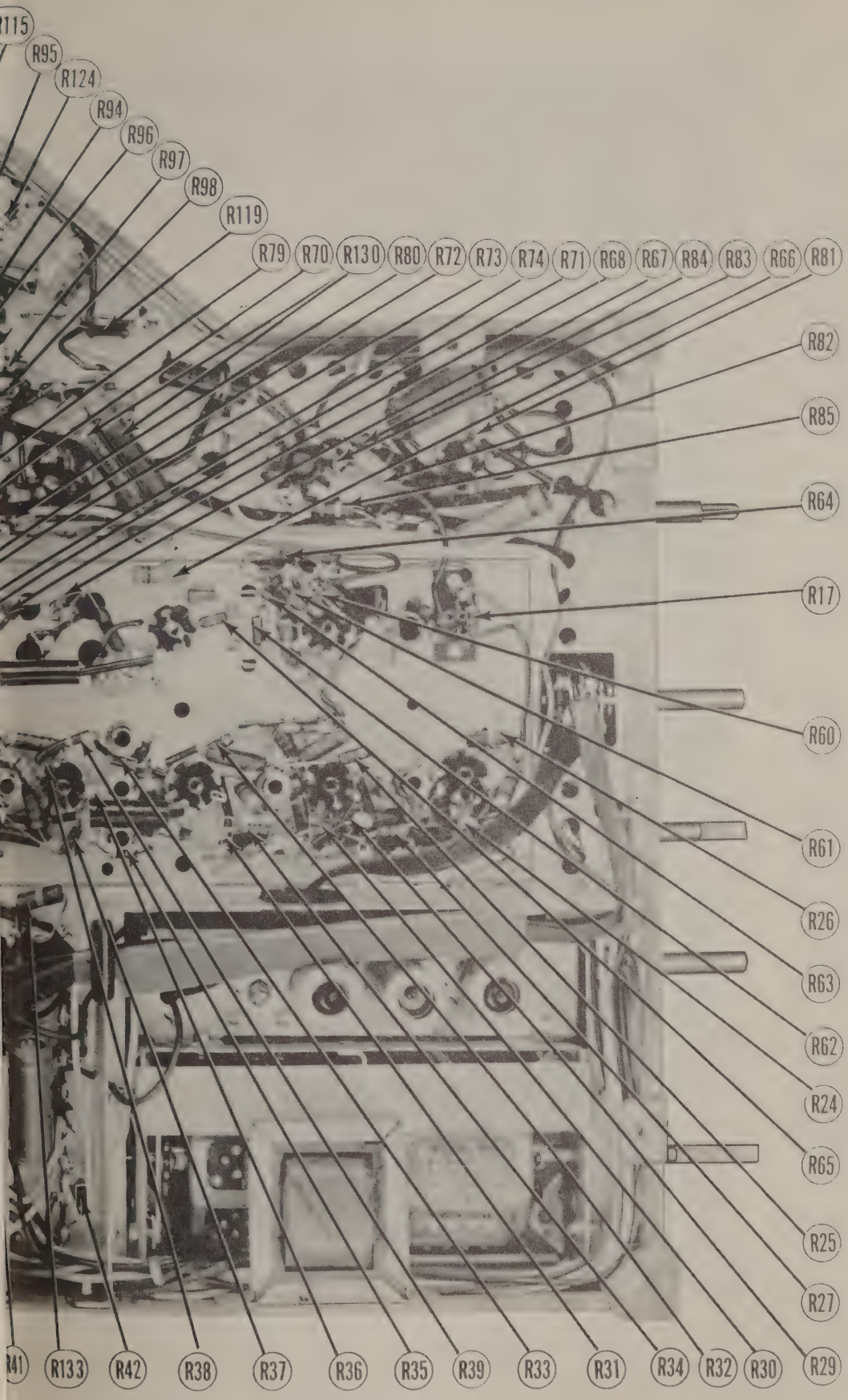
RADIO CHASSIS–TOP VIEW



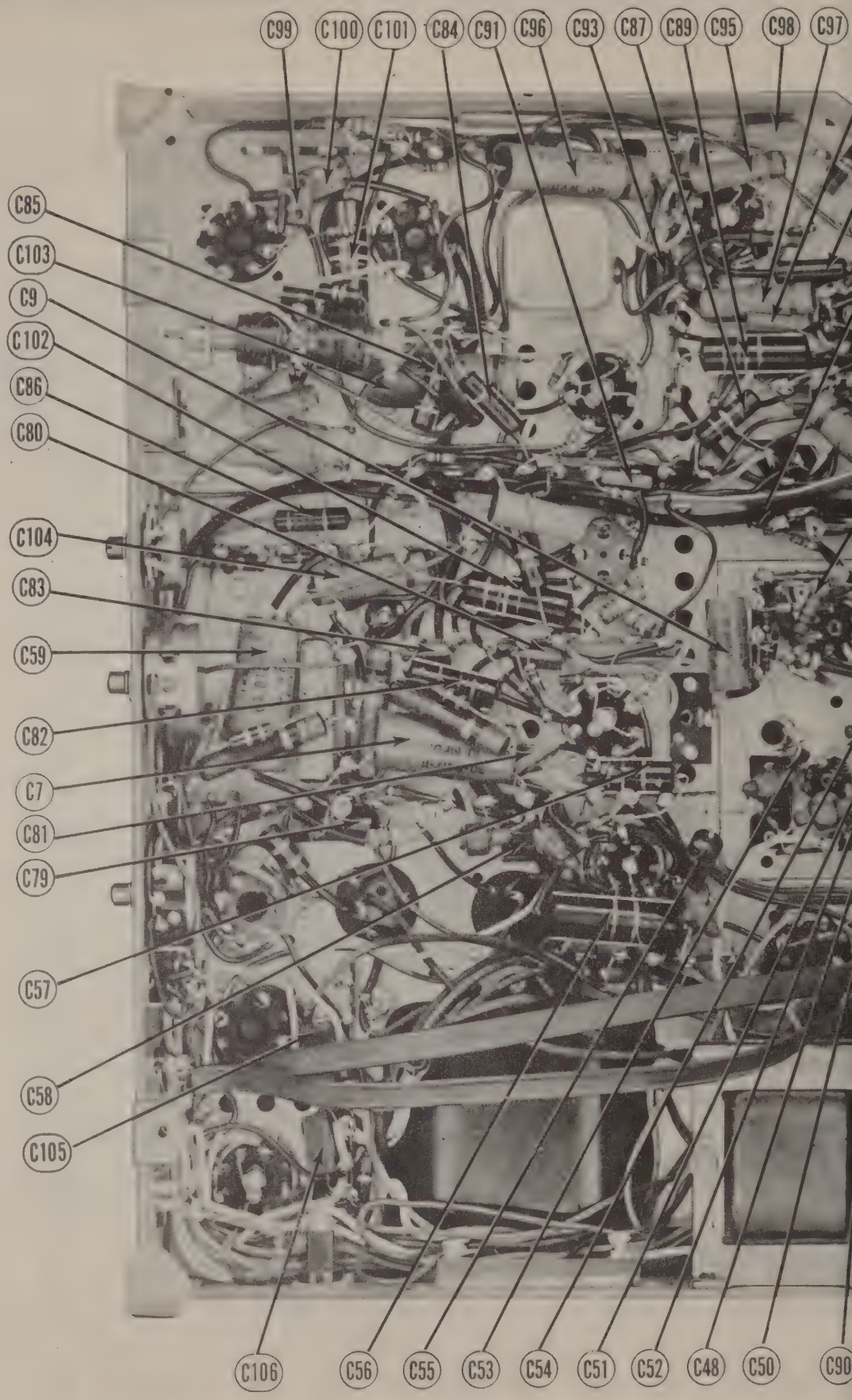
RADIO CHASSIS-BOTTOM VIEW-RESISTOR AND ALIGNMENT IDENTIFICATION



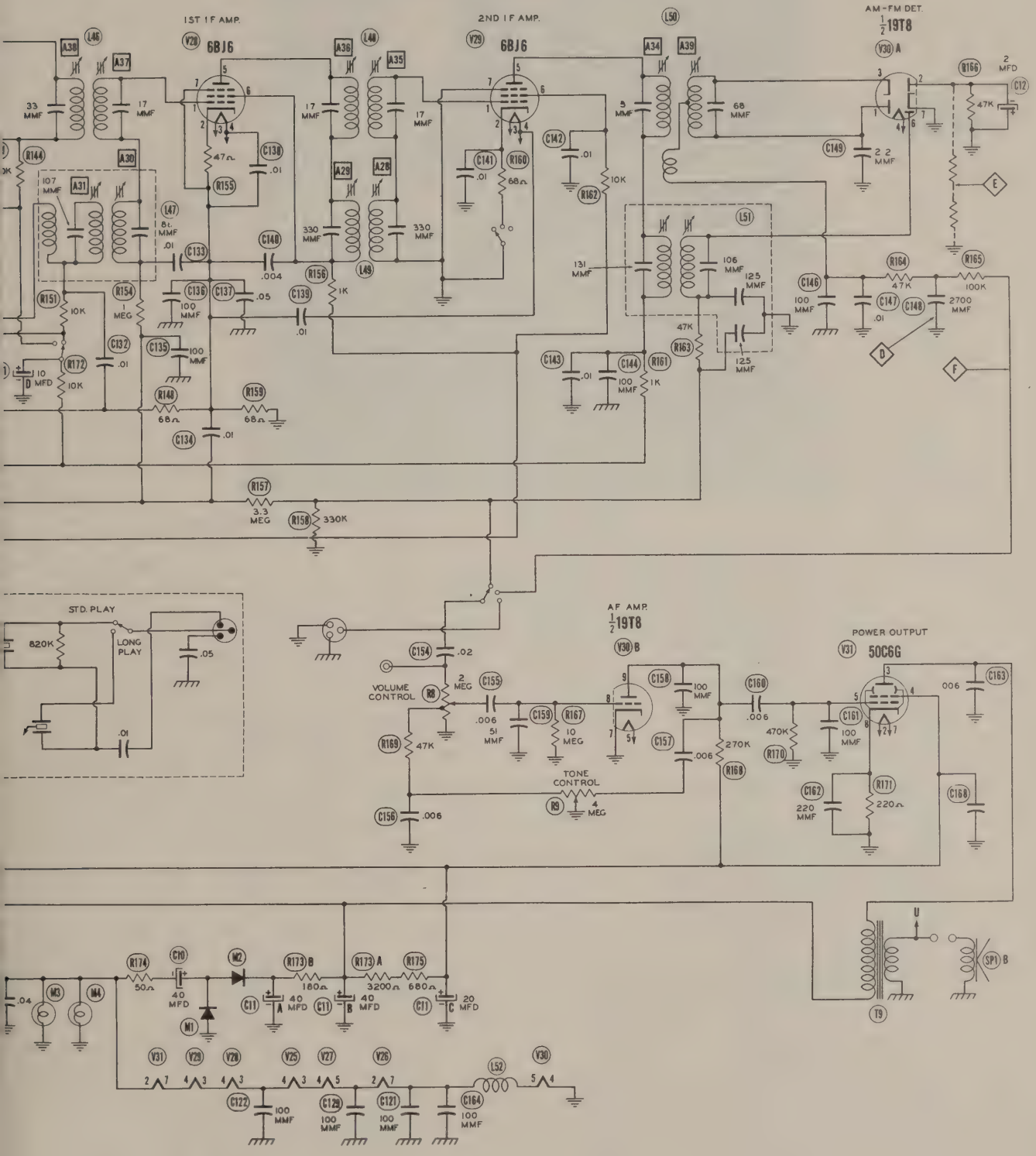
RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



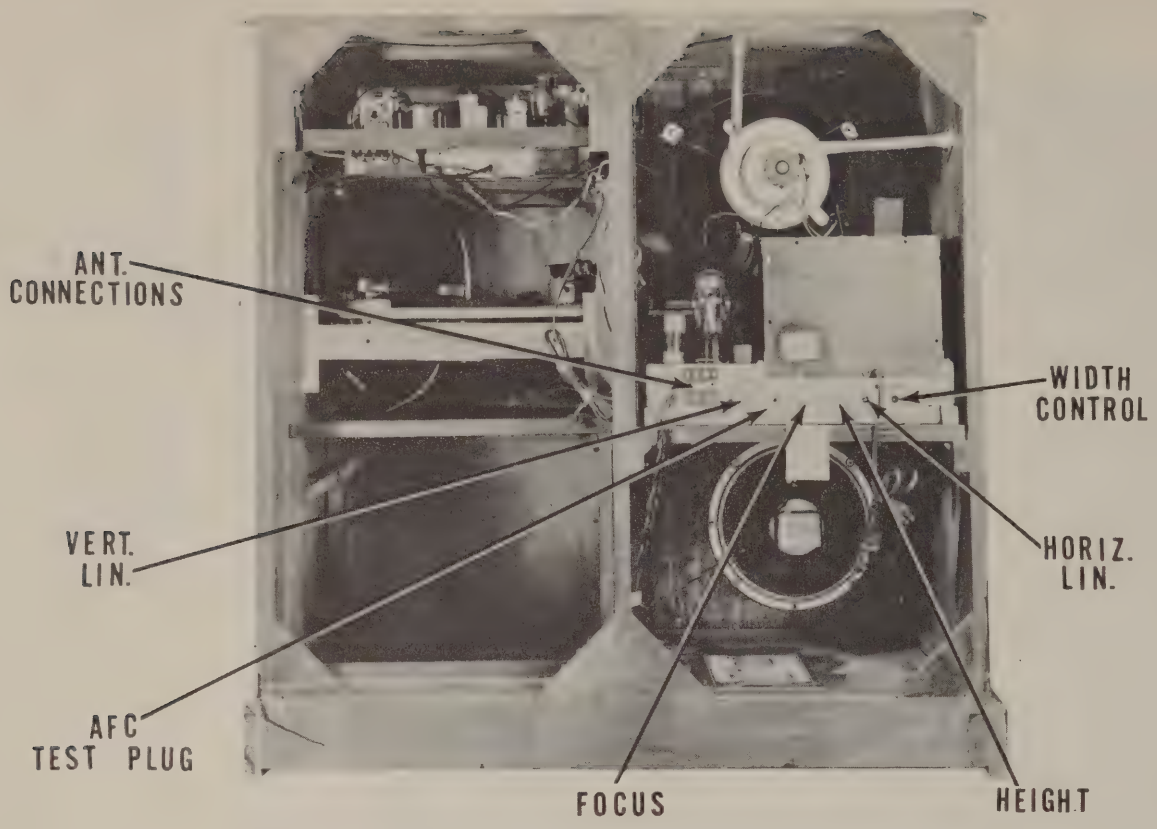
RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-C



PHILCO
MODELS 49-1150, 49-1175



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove nine push-on type control knobs from TV and radio panels.
2. From front center bottom of cabinet, push back spring clamp and remove lamp housing with downward pull. Disengage lamp sockets (two) and wires and feed back up thru hole to rear of cabinet.
3. Remove seven phillips head screws from left rear back cover. Remove cover. (Radio and record player now visible.)
4. Remove seven phillips head screws from right rear back cover. Remove cover. (TV set is now visible).
5. Remove two screws from board across rear of phonograph. Spacers are between board and phonograph. (This enables phono front door to open.
6. Loosen 3 screws on terminal board at rear of receiver and slip off one white, two black, and one green wires.
7. Remove two cables from rear of receiver chassis with slight pull.
8. Remove four 3/8" bolts from under receiver mounting board.
9. Pull out receiver power cord from left rear side of TV chassis.
10. Remove rubber grommets from under two front corners of record player and rear center. Unscrew flat nuts. These nuts are spring loaded and springs will drop off studs when nuts are removed.
11. Remove tape and unsolder two leads spliced under record changer (red to white and black to brown).
12. Remove record player from cabinet.
13. Remove radio from cabinet.
14. Remove speaker plug from left rear of TV chassis.
15. Remove four 3/8" hex nuts and paper washers from speaker mounting. Remove speaker.
16. Remove HV cap from TV picture tube.
17. Remove TV picture tube socket.
18. Remove plug from top rear of TV chassis leading to picture tube.
19. Remove four 5/16" bolts from under side of TV chassis support board.
20. Slide out TV set.
21. Remove three 7/16" hex nuts from large end ring holding picture tube.
22. Remove two 7/16" hex nuts from picture tube neck braces.
23. Push back braces and remove picture tube by sliding back.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF Amp.	6AG5	6AG5	7BD	
V5	2nd Video IF Amp.	6AG5	6AG5	7BD	
V6	3rd Video IF Amp.	6AG5	6AG5	7BD	
V7	4th Video IF Amp.	6AG5	6AG5	7BD	
V8	Video Det.-AGC	6AL5	6AL5	6BT	
V9	Video Amp.-Video Output	12AU7	12AU7	9A	
V10	DC Restorer-Sync. Amp.	7F7	7F7	8AC	
V11	1st Sound IF Amp.	6BA6	6BA6	7BK	
V12	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amp.	6AU6	6AU6	7BK	
V15	Audio Output	6K6GT	6K6GT	7S	
V16	Sync. Pre Amp.-Sync. Sep.	7N7	7N7	8AC	
V17	Vert. Osc. & Disch.	7N7	7N7	8AC	
V18	Vert. Output	6K6GT	6K6GT	7S	
V19	Hor. AFC & Hor. Osc.	7N7	7N7	8AC	
V20	Hor. Output	6BG6G	6BG6G	5BT	
V21	Damper	5V4G	5V4G	5L	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	
V24	LV Rectifier	7Z4	7Z4	5T	
V25	FM RF Amp.	12AU6	12AU6	7BK	
V26	FM Converter	14F8	14F8	8BW	
V27	AM Converter	12AU7	12AU7	9A	
V28	1st IF Amp.	6BJ6	6BJ6	7CM	
V29	2nd IF Amp.	6BJ6	6BJ6	7CM	
V30	AM-FM Det.-AF Amp.	19T8	19T8	9E	
V31	Audio Output	50C6G	50C6G	7AC	
V32	Picture Tube	10BP4	10BP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	30	475	30-2568-19	AFH6X	UP3050		TVL-7	Filter
C2A	40	475	30-2570-8	AFH824X2A	UP8DJ 826		TVL-38	◓ Filter
B	10	475						■ Filter
C	20	475						▲ Filter
D	10	25						Hor. Output Cath. Byp.
C3	30	250	30-2568-19	AF6F	UP3025		EL-42	Filter
C4A	10	475	30-2570-10	AFH2222X	UP7DJ 825		TVL-39	◓ Sync. Amp. Decoupling
B	10	475						■ Low Pass Filter
C	10	475						▲ Decoupling
D	10	475						Decoupling
C5A	10	450	30-2570-16	AF22J	UP5CJ		TVL-52	■ Low Pass Filter
B	10	450		PRS50/50	879			▲ Filter
C	40	50						Vert. Output Cath. Byp.
C6A	10	450	45-3006	AF22J	UP5CJ		TVL-52	Vert. Osc. Plate Dec.
B	10	450		PRS50/50	879			" " " "
C	40	50						Output Cath. Bypass
C7	10	300	30-2417-6	PRS350/12	BR1235		UT-123	Decoupling
C8	10	25	30-2417-1	PRS25/10	BR102A		TVA-5	AGC Filter
C9	2	50	30-2417-7		BR215		TVA-12	Stabilizing Cap.
C10	40	200	30-2568-28	AF8F	UP4025		TVL-3	Voltage Doubler Cap.
C11A	40	300	30-2568-24	AF8H84G4A ††	UP8DJ 907		D13307	◓ Filter
B	40	300		PRS350/12				■ Filter
C	20	300						▲ Filter
D	10	300						Filter
C12	2	50	30-2417-7		BR215		TVA-12	Stabilizing Cap
C13	220		62-122001001			GP2K-200		RF Coupling
C14	470		62-147001001			GP2K-500		AVC Filter
C15	.5-5		31-6511-1			532-.5-5		Variable Trimmer
C16	470		62-147001001			GP2K-500		RF Fil. Bypass
C17	470		62-147001001			GP2K-500		RF Decoupling
C18	10		62-010009001			GP1K-10		" "
C19	220		62-122001001			GP2K-200		RF Coupling
C20	.5-5		31-6511-1			532-.5-5		Variable Trimmer
C21	10		62-010009001			GP1K-10		Mixer Screen Bypass
C22	470		62-147001001			GP2K-500		" " "
C23	1000	500	45-3500-5			GP2L-001		RF Bypass
C24	470		62-010009001			GP2K-500		Osc. Plate Decoupling
C25	220		62-122001001			GP2K-200		Osc. Cath. Bypass
C26	22		62-022009001			GP1K-25		Osc. Grid Cap.
C27	10		30-1224-51			N750K-10		Fixed Padder
C28	3.3		30-1221			NP0K-3		Neutralizing
C29	470		62-147001001			GP2K-500		AFC Filter
C30	220		62-122001001			GP2K-200		Phase Shifter
C31	470		62-147001001			GP2K-500		Osc. Fil. Bypass
C32	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	Mixer Plate Dec.
C33	470		62-147001001	1468-0005	5W5T5	GP2K-500	1FM-35	IF Coupling
C34	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	AGC Filter
C35	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	1st V. IF Decoup.
C36	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	RF By pass
C37	470		62-147001001	1468-0005	5W5T5	GP2K-500	1FM-35	IF Coupling
C38	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	AGC Filter

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C39	150C		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd V. IF Decoupling
C40	100		62-010009001	1468-0001	5W5T1	GP1K-100	1FM-31	" " "
C41	470		62-147001001	1468-0005	5W5T5	GP2K-500	1FM-33	IF Coupling
C42	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	AGC Filter
C43	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Decoupling
C44	10		62-010009001	1468-00001	5W5Q1	GP1K-10	MS-41	3rd V. IF Decoupling *
C45	470		62-147001001	1468-0005	5W5T5	GP2K-500	1FM-33	IF Coupling
C46	18		60-00185317					Fixed Trimmer
C47	18		60-00185317					" "
C48	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	4th V. IF Cath. Bypass
C49	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	4th V. IF Decoupling
C50	470		62-147001001	1468-0005	5W5T5	GP2K-500	1FM-33	IF Coupling
C51	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	Video Coupling
C52	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	AGC Diode Filter
C53	10		62-010009001	1468-00001	5W5Q1	GP1K-10	MS-41	Video Diode Filter
C54	56		62-056409001					Fixed Trimmer
C55	.047	400	61-0122	P488-047	GT4S5		TM-15	Video Coupling
C56	.22	400	45-3500-9	P488-22	GT4P25		TC-2	" "
C57	.047	400	45-3500-14	P488-047	GT4S5		TM-15	" "
C58	4000	500	45-3502	1467-004	1D5D4	GP2M-005	1FM-24	" " †
C59	.5	400	45-3500-4	484-5	GT4P5		TC-5	Pic. Tube Cath. Dec.
C60	56		62-056409001					Fixed Trimmer
C61	10000	500	30-1226-10	1467-01	1D3S1	GP2-335-01	1FM-11	S. IF Coupling
C62	470		62-147001001	1468-0005	5W5T5	GP2K-500	1FM-33	1st S. IF Cath. Byp.
C63	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Decoupling
C64	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	" " "
C65	56		62-056409001	1468-00005	5W5Q5	GP1K-50	1FM-45	S. IF Coupling
C66	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd S. IF Decoupling
C67	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	Diode Load Cap **
C68	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	" " " **
C69	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	AFC Bypass
C70	.1	200	61-0113	P288-1	GT2P1		TM-1	AFC Filter
C71	.1	200	61-0113	P288-1	GT2P1		TM-1	AFC Filter
C72	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C73	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	Tone Comp.
C74	.002	400	61-0062	P688-002	GT6D2	GP2M-002	TM-22	" "
C75	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C76	.1	400	61-0113	P488-1	GT4P1		TM-1	AF Screen Bypass
C77	.01	600	61-0120	P688-01	GT6S1	GP2-335-01	TM-11	Audio Coupling
C78	.0068	1000	61-0105	P1068-0068	GT16D7		TM-26	Output Plate Bypass
C79	.047	400	61-0122	P488-047	GT4S5		TM-15	Sync. Coupling
C80	330	500	60-10335407	1468-00035	5W5T3	GP2K-300	1FM-335	" "
C81	22	500	60-00245307	1468-000025	5W5J25	GP1K-25	MS-425	Sync. Sep. Grid Bypass
C82	.047	400	61-0122	P488-047	GT4S5		TM-15	Sync. Coupling
C83	220	500	62-122001001	1468-0002	5W5T2	GP2K-200	1FM-32	Voltage Divider
C84	.0022	600	61-0062	P688-0022	GT6D2	GP2M-002	TM-22	Integrator Net.
C85	.0047	600	45-3502	P688-0047	GT6D5	GP2M-005	TM-25	" "
C86	.0047	600	45-3502	P688-0047	GT6D5	GP2M-005	TM-25	" "
C87	.0056	400	45-3500-7					Vert.Osc. Grid Cap.
C88	150	500	60-10155407	1468-00015	5W5T15	GP2K-150	1FM-315	Vert. Osc. Plate Byp.
C89	.082	400	30-4651-3					Vert. Discharge
C90	.1	400	61-0113	P488-1	GT4P1		TM-1	Vert. Coupling
C91	150	500	60-10155407	1468-00015	5W5T15	GP2K-150	1FM-315	Sync. Coupling
C92	180	500	30-1220-30					Voltage Divider
C93	270	500	60-10275407					Hor. Osc. Grid Cap.
C94	.0022	600	61-0062	P688-0022	GT6D2	GP2M-002	TM-22	Hor. Sync. Coupling
C95	.02	400	61-0108	P488-02	GT4S2		TM-12	AFC Filter
C96	.25	400	61-0125	P488-25	GT4P25		TC-2	" "
C97	.05	400	61-0122	P488-05	GT4S5		TM-15	AFC Plate Bypass
C98	1500	500	60-20155404	1467-0015	1W5D15	GP2L-0015	1FM-215	Hor. Discharge
C99	5	500	60-90505007	1468-000005	5W5V5	NP0K-5	MS-55	AFC Feedback
C100	390	500	60-10305307	1468-0004	5W5T4		1FM-34	Hor. Coupling
C101	.082	400	30-4651-3					Damper Filter
C102	.082	400	30-4651-3					"
C103	.5	200	61-0122	P288-5	GT2P5		TC-5	Hor. Coupling
C104	.1	200	61-0113	P288-1	GT2P1		TM-1	Bias Filter
C105	.01	600	30-1226-1	P688-01	GT6S1		TM-11	Line Filter
C106	.01	600	30-1226-1	P688-01	GT6S1		TM-11	" "
C107	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	Ant. Coupling
C108	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	" "
C109	51		30-1224-2	1468-00005	5W5Q5	GP1K-50	1FM-45	RF Coupling
C110	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C111	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	FM RF Cath. Bypass
C112	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	FM RF Screen Bypass
C113	51		30-1224-2	1468-00005	5W5Q5	GP1K-50	1FM-45	RF Coupling
C114	220		62-122001001	1468-0002	5W5T2	GP2K-200	1FM-32	" "
C115	.03	400	61-0119	P488-03	GT4S3		TM-13	RF Bypass ‡
C116	100		61-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	FM Conv. Cath. Byp.
C117	220		62-122001001	1468-0002	5W5T2	GP2K-200	1FM-32	FM Osc. Feedback
C118	220		62-122001001	1468-0002	5W5T2	GP2K-200	1FM-32	" " "
C119	51		30-1224-2	1468-00005	5W5Q5	GP1K-50	1FM-45	FM Osc. Grid Cap.
C120	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	FM Osc. Plate Dec.
C121	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	FM Osc. Fil. Bypass
C122	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	FM RF Fil. Bypass
C123	10		62-010009001	1469-00001	5R5Q1	NP0K-10	MS-41	Fixed Trimmer
C124	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	RF Coupling
C125	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	AM Conv. Cath. Bypass
C126	220		62-122001001	1468-0002	5W5T2	GP2K-200	1FM-32	AM Osc. Grid Cap.
C127	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	AM Osc. Feedback
C128	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	Isolation
C129	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	AM Conv. Fil. Bypass
C130	1500		62-215001011	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C131	.01	600	61-0120	P688-01	GT6S1	GP2-335-01	TM-11	FM Conv. Plate Dec.
C132	.01	600	61-0120	P688-01	GT6S1	GP2-335-01	TM-11	AM Conv. Plate Dec.
C133	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	AVC Filter
C134	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	" "
C135	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C136	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C137	.05	400	61-0122	P488-05	GT4S5		TM-15	" "
C138	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	Fil. Bypass
C139	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	" "
C140	.004	600	61-0179	P688-004	GT6D4	GP2M-005	TM-24	1st IF Decoupling
C141	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	2nd IF Cath. Bypass
C142	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	2nd IF Screen Bypass
C143	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	2nd IF Plate Dec.
C144	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	" " "
C145	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	RF Bypass
C146	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	" "
C147	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	Diode Load Cap.
C148	2700	500	60-20275404	1467-0025	1W5D25	GP2M-0025	1FM-23	De-emphasis

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C149	2.2		30-1221-4					Compensation *
C150	.03	400	45-3500-1	P488-03	GT4S3		TM-13	Line Isolation
C151	.05	400	61-0170	P488-05	GT4S5		TM-15	" "
C152	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C153	.01	400	61-0120	P488-01	GT4S1	GP2-335-01	TM-11	" "
C154	.02	400	61-0108	P488-02	GT4S2		TM-12	Audio Coupling
C155	.006	400	45-3500-7	P488-006	GT6D6	GP2M-005	TM-26	" "
C156	.006	400	45-3500-7	P488-006	GT6D6	GP2M-005	TM-26	Tone Comp.
C157	.006	400	45-3500-7	P488-006	GT6D6	GP2M-005	TM-26	" "
C158	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C159	51		30-1224-2	1468-00005	5W5Q5	GP1K-50	1FM-45	AF Grid Bypass *
C160	.006	400	45-3500-7	P488-006	GT6D6	GP2M-005	TM-26	Audio Coupling
C161	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	Output Grid Bypass
C162	220		62-110009001	1468-00025	5W5T25	GP2K-250	1FM-32	Output Cath. Bypass *
C163	.006	600	45-3500-7	P688-006	GT6D6		TM-26	Output Plate Bypass
C164	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	Filament Bypass
C165	100		62-110009001	1468-0001	5W5T1	GP1K-100	1FM-31	RF Bypass
C166	.04	400	45-3500-2	P488-04	GT6S4		TM-14	Line Filter
C167	500	10000	30-1229-2			410-500		HV Filter
C168	220		62-110009001	1468-00025	5W5T25	GP2K-250	1FM-325	RF Bypass

† Some models use 5000MMFD in this application.
‡ Some models use .02MFD in this application.
** When either item C67 or C68 are replaced, replace both with capacitors of equal value.
†† Omit bypass section.
* Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	50KΩ	½	33-5563-3			Horiz. Hold Control (Dual Concentric)
B	1 Meg.	½				Vert. Hold Control (Dual Concentric)
R2	2 Meg.	½	76-3964			Volume Control and Switch #
R3A	2500Ω	½	33-5563-14*			Contrast Control (Dual Concentric)
B	250KΩ	½				Channel Adjuster Control (Dual Concentric)
R4	100KΩ	½	33-5539-43	Q11-128	M-48-S	Brightness Control
R5	5000Ω	2	33-5546-10	W-5000	58-5000	Vert. Linearity Control (Wire Wound)
R6A	250KΩ	½	33-5546-42	Q11-130	M-55-S	Height Control
B	Shaft			Not Req.	Not Req.	Attach to R6A Per Instructions
R7	200Ω	4	33-5546-13		10-200	Focus Control
R8	2 Meg.	½	33-5535-17	Q18-139X	T-102	Volume Control (Radio Chassis)
R9A	4 Meg.	½	33-5538-34	Q11-141		Tone Control
B	Switch		Not Req.	76-1		Attach to R9A Per Instructions.

This control is mounted to rear of two wafer Radio-TV change-over switch.
* Some models use 5000Ω. 2 Watt contrast control only, Part No. 33-5548-11.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES ± 10% UNLESS OTHERWISE STATED.
R10	220Ω	½	62-1228340		Ant. Shunt
R11	220Ω	½	62-1228340		" "
R12	100KΩ	½	62-4108340		RF Grid 20%
R13	47Ω	½	62-0478340		RF Cathode
R14	2700Ω	½		BTS-2700	RF Plate
R15	1000Ω	½	62-2108340		RF Decoupling 20%
R16	100KΩ	½	62-4108340		Mixer Grid 20%
R17	3300Ω	½	66-2338340	BTS-3300	Mixer Plate Decoupling
R18	56KΩ	½	62-3568340	BTS-56K	Mixer Screen
R19	22KΩ	1	62-3228340	BTA-22K	Voltage Divider
R20	22KΩ	½	62-3228340	BTS-22K	Osc. Grid
R21	220Ω		62-1228340		Osc. Cathode
R22	22KΩ	½	62-3228340	BTS-22K	AFC Grid
R23	560Ω	½	62-1568340		AFC Filter
R24	8200Ω	½	66-2828340		1st Video IF Grid
R25	330Ω	½	66-1334340		1st Video IF Decoupling
R26	120Ω	½	66-1128340	BW-½-120	1st Video IF Cathode (Wire Wound)
R27	3300Ω	½	66-2338340	BTS-3300	AGC Network 20%
R28	5600Ω	½	66-2568340		2nd Video IF Grid
R29	120Ω	½	66-1128340	BW-½-120	2nd Video IF Cathode (Wire Wound)
R30	3300Ω	½	66-2338340	BTS-3300	AGC Network 20%
R31	5600Ω	½	66-2568340		3rd Video IF Grid
R32	68Ω	½	66-0688340		3rd Video IF Cathode
R33	8200Ω	½	66-2828340		3rd Video IF Transformer Shunt
R34	3300Ω	½	66-2338340	BTS-3300	AGC Network 20%
R35	22KΩ	½	66-3228340		Filter Network
R36	15KΩ	½	66-3158340	BTS-15K	4th Video IF Grid Coil Shunt
R37	100Ω	½	66-1108340		4th Video IF Cathode
R38	6800Ω	½	66-2688340	BTS-6800	4th Video IF Plate
R39	1000Ω	½	66-2108340	BTS-1000	4th Video IF Decoupling
R40	27KΩ	½	66-3278340	BTS-27K	AGC Diode Filter
R41	120KΩ	½	66-4128340	BTS-120K	AGC Diode Load
R42	10KΩ	½	66-3108340	BTS-10K	AGC Network
R43	47KΩ	½	66-3478340		Peaking Coil Shunt 20%
R44	3300Ω	½	66-2338340	BTS-3300	Video Det. Diode Load
R45	1 Meg.	½	66-5108340	BTS-1 Meg.	Video Amp. Grid 20%
R46	47KΩ	½	66-3478340	BTS-47K	Peaking Coil Shunt 20%
R47	4700Ω	1	66-2478340	BTA-4700	Video Amp. Plate
R48	4700Ω	1	66-2475340	BTA-4700	Filter
R49	100KΩ	½	66-4108340	BTS-100K	Picture Tube Cathode
R50	330KΩ	½	66-4338340	BTS-330K	Video Output Grid
R51	47Ω	½	66-0478340		Video Output Cathode
R52	47KΩ	½	66-3478340		Peaking Coil Shunt 20%
R53	33000Ω	1	66-2338340	BTA-3300-5%	Video Output Plate 5%
R54	10000Ω	½	66-2108340	BTS-1000-5%	" " " 5%
R55	10KΩ	½	66-3108340	BTS-10K	" " "
R56	10KΩ	2	66-3105340	BT-2-10K	Low Pass Filter
R57	10KΩ	½	66-4108340	BTS-10K	Phase Correction
R58	470KΩ	½	66-4478340	BTS-470K	Picture Tube Grid 20%
R59	1 Meg.	½	66-5108340	BTS-1 Meg.	Voltage Divider 20%
R60	470KΩ	½	66-4478340		1st Sound IF Grid 20%
R61	68Ω	½	66-0688340		1st Sound IF Cathode
R62	22KΩ	½	66-3228340		1st Sound IF Transformer Shunt
R63	1000Ω	½	66-2108340		1st Sound IF Decoupling
R64	330Ω	½	66-1333340		Decoupling
R65	68KΩ	½	66-3688340	BTS-68K	2nd Sound IF Grid 20%
R66	10KΩ	1	66-3108340	BTA-10K	2nd Sound IF Plate

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R67	22KΩ	½	66-3223340	BTS-22K	Voltage Divider
R68	47Ω	½	66-0473340	BW-½-47	Balancing (Wire Wound)
R69	5.1Ω	2	66-9473340		Disc. Filament (Wire Wound) 5%
R70	10KΩ	½	66-3108340	BTS-10K	De-emphasis
R71	6800Ω	½	66-2688340	BTS-6800	Balancing
R72	6800Ω	½	66-2688340	BTS-6800	" "
R73	68KΩ	½	66-3688340	BTS-68K	Disc. Load
R74	68KΩ	½	66-3688340	BTS-68K	Disc. Load
R75	47KΩ	½	66-3478340	BTS-47K	Tone Compensation
R76	330KΩ	½	66-4338340	BTS-330K	Bias Filter
R77	15KΩ	½	66-3158340	BTS-15K	Voltage Divider
R78	270KΩ	½	66-4278340	BTS-270K	" "
R79	470KΩ	½	66-4478340	BTS-470K	AFC Network 20%
R80	470KΩ	½	66-4478340	BTS-470K	" " 20%
R81	4.7 Meg.	½	66-5478340	BTS-4.7 Meg.	1st AF Grid 20%
R82	47KΩ	1	66-3474340	BTA-47K	1st AF Plate
R83	560KΩ	½	66-4564340	BTS-560K	1st AF Screen
R84	1 Meg.	1	66-5108340	BTS-1 Meg.	Output Grid 20%
R85	270Ω	1	66-1274340	BW-1-270	Output Cathode
R86	470KΩ	½	66-4478340	BTS-470K	Sync. Pre-Amp. Grid 20%
R87	10KΩ	1	66-3108340	BTA-10K	Sync. Pre-Amp. Plate
R88	5100Ω	5	33-1335-18	AB-5000	Filter (Wire Wound)
R89	10KΩ	½	66-3108340	BTS-10K	Sync. Sep. Grid
R90	4.7 Meg.	½	66-5478340	BTS-4.7 Meg.	Sync. Sep. Grid
R91	10KΩ	½	66-3108340	BTS-10K-5%	Voltage Divider 5%
R92	56KΩ	1	66-3564340	BTA-56K	Sync. Sep. Plate
R93	100KΩ	1	66-4104340	BTA-100K	Vert. Osc. Decoupling
R94	68KΩ	½	66-3688340	BTS-68K	Vert. Osc. Grid
R95	10KΩ	½	66-3108340	BTS-10K	Vert. Discharge Grid
R96	1 Meg.	½	66-5108340	BTS-1 Meg.	" " "
R97	470KΩ	1	66-4474340	BTA-470K	Vert. Discharge Plate
R98	10KΩ	½	66-3108340	BTS-10K	Vert. Discharge Decoupling
R99	2.2 Meg.	½	66-5228340	BTS-2.2 Meg.	Vert. Output Grid 20%
R100	1000Ω	1	66-2104340	BTA-1000	Vert. Output Cathode
R101	3300Ω	1	66-2334340	BTA-3300	Vert. Peaking
R102	68KΩ	1	66-3688340	BTA-68K	Voltage Divider
R103	10KΩ	½	66-3108340	BTS-10K	Sync. Amp. Grid 20%
R104	1 Meg.	½	66-5108340	BTS-1 Meg.	Voltage Divider
R105	10KΩ	½	66-3108340	BTS-10K	Sync. Amp. Plate
R106	3900Ω	½	66-2398340	BTS-3900	Sync. Amp. Plate Decoupling
R107	33KΩ	1	66-3334340	BTA-33K	Filter
R108	22KΩ	½	66-3228340	BTS-22K	Integrator
R109	8200Ω	½	66-2828340	BTS-8200	"
R110	8200Ω	½	66-2828340	BTS-8200	"
R111	220KΩ	½	66-4228340	BTS-220K	AFC Feedback
R112	10KΩ	½	66-3108340	BTS-10K-5%	Horiz. Osc. Transformer Shunt 5%
R113	68KΩ	½	66-3688340	BTS-68K	Horiz. Osc. Plate
R114	100KΩ	1	66-4104340	BTA-100K-5%	Horiz. Osc. Grid 5%
R115	100KΩ	1	66-4104340	BTA-100K-5%	Voltage Divider 5%
R116	180KΩ	½	66-4188340	BTS-180K	Horiz. AFC Filter
R117	3.3 Meg.	1	66-5334340	BTA-3.3 Meg.	Voltage Divider
R118	560KΩ	½	66-4568340	BTS-560K	Horiz. AFC Grid
R119	42KΩ	½	33-1343-2		Voltage Divider Temp. Comp.
R120	82KΩ	1	66-3824340	BTA-82K	Voltage Divider See Note 1
R121	10KΩ	½	66-3108340	BTS-10K	Filter
R122	8200Ω	½	66-2828340	BTS-8200	Horiz. Peaking
R123	100Ω	½	66-1108340		Parasitic Suppressor 20%
R124	220KΩ	½	66-4228340	BTS-220K	Horiz. Output Grid
R125	100Ω	5	66-1105340	AB-100	Horiz. Output Cathode (Wire Wound)
R126	39000Ω	2	66-2395340	BT-2-3900-5%	Horiz. Output Screen 5%
R127	12Ω	2	66-0125340	BW-2-12	Bias Network See Note 1
R128	12Ω	2	66-0125340	BW-2-12	" " " " "
R129	47KΩ	½	66-3478340	BTS-47K	Bias Filter
R130	270Ω	4	66-1274340		Filter (Wire Wound) See Note 1
R131	10KΩ	10	33-1336-21	AB-10K	"
R132	1900Ω	10	33-3435-15	AB-2000	Filter (Wire Wound)
R133	1 Meg.	1	66-5104340	BTA-1 Meg.	Bleeder
R134	56Ω	2	66-0565340		Surge Limiter
R135	33Ω	½	66-0338340	BW-½-33	Pilot Lamp Shunt (Wire Wound)
R136	680KΩ	1	66-4684340	BTA-680K	HV Filter
R137	680KΩ	1	66-4684340	BTA-680K	" "
R138	560KΩ	½	66-4568340	BTS-560K	Feedback
R139	1 Meg.	½	66-5108340	BTS-1 Meg.	FM RF Grid 20%
R140	100Ω	½	66-1108340	BW-½-100	FM RF Cathode 20%
R141	15KΩ	½	66-3158340	BTS-15K	FM RF Screen 20%
R142	10KΩ	½	66-3108340	BTS-10K	FM Conv. Grid 20%
R143	1500Ω	½	66-2158340	BTS-1500	FM Conv. Cathode 20%
R144	10KΩ	½	66-3108340	BTS-10K	FM Conv. Plate 20%
R145	15KΩ	½	66-3158340	BTS-15K	FM Osc. Grid 20%
R146	10KΩ	½	66-3108340	BTS-10K	FM Osc. Plate 20%
R147	68Ω	½	66-0688340	BW-½-68	Bias Network (Wire Wound) 20%
R148	68Ω	½	66-0688340	BW-½-68	Bias Network (Wire Wound) 20%
R149	1 Meg.	½	66-5108340	BTS-1 Meg.	AM Conv. Grid 20%
R150	1500Ω	½	66-2158340	BTS-1500	AM Conv. Cathode 20%
R151	10KΩ	½	66-3108340	BTS-10K	AM Conv. Plate 20%
R152	15KΩ	½	66-3158340	BTS-15K	AM Osc. Grid 20%
R153	33KΩ	½	66-3338340	BTS-33K	AM Osc. Plate 20%
R154	1 Meg.	½	66-5108340	BTS-1 Meg.	1st IF Grid 20%
R155	47Ω	½	66-0478340	BW-½-47	1st IF Cathode 20%
R156	1000Ω	½	66-2108340	BTS-1000	1st IF Decoupling 20%
R157	3.3 Meg.	½	66-5338340	BTS-3.3 Meg.	AVC Network 20%
R158	330KΩ	½	66-4338340	BTS-330KΩ	" " 20%
R159	68Ω	½	66-0688340	BW-½-68	Bias Network (Wire Wound) 20%
R160	68Ω	½	66-0688340	BW-½-68	2nd IF Cathode (Wire Wound) 20%
R161	1000Ω	½	66-2108340	BTS-1000	2nd IF Decoupling 20%
R162	10KΩ	½	66-3108340	BTS-10K	2nd IF Screen 20%
R163	47KΩ	½	66-3478340	BTS-47K	Diode Filter 20%
R164	47KΩ	½	66-3478340	BTS-47K	De-emphasis 20%
R165	100KΩ	½	66-4108340	BTS-100K	AVC Network 20%
R166	47KΩ	½	66-3478340	BTS-47K	Ratio Det. Diode Load 20%
R167	10 Meg.	½	66-6108340	BTS-10 Meg.	1st AF Grid 20%
R168	270KΩ	½	66-4278340	BTS-270K	1st AF Plate 20%
R169	47KΩ	½	66-3478340	BTS-47K	Tone Compensation 20%
R170	470KΩ	1	66-4473340	BTS-470K	Output Grid 20%
R171	220Ω	2	66-1228340	BW-2-220	Output Cathode (Wire Wound)
R172	10KΩ	1	66-3104340	BTA-10K	Filter
R173A	3200Ω	5	33-3435-23		Filter (Wire Wound)
B	180Ω	5			Filter (Wire Wound)

PHILCO MODELS 49-1150, 49-1175

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R174	50Ω	5	33-1335-84		Surge Limiter (Wire Wound)
R175	680Ω	1	66-1684340	BW-1-680	Filter
R176	100Ω	5	66-1105340		Horiz. Output Cathode See Note 2 (Wire Wound)

Note 1. Some models use two resistors in parallel to obtain required resistance and wattage.
Note 2. Used in model 49-1150, Code 121A or B, only.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 2.0A	660VCT @ .22 ADC 410VCT @ .084 ADC	5VAC @ 3A	5VAC @ 2A SEC. 4 6.3VAC @ 9.4A	32-8376		TP-450 #	

Add series resistor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		PHILCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.					
T2	39Ω	9Ω	32-4367				Hor.Block Osc. Trans.
T3	166Ω	320Ω	32-8304-3				Vert. Block Osc. Trans.
T4	260Ω	SEC. 1	32-8398				Hor. Output Transfromer
	Tap @	2.5Ω					
	40Ω	SEC. 2					
		0Ω					
T5	650Ω	9.4Ω	32-8306-1	A-8115	TS0-1	A-3035	Vert. Output Transformer.
T6A	10Ω		32-9604				Hor. Deflection Yoke
B	35Ω						Vert. Deflection Yoke
T7	120Ω		76-2622				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	4600Ω	3.7Ω	510Ω	.4Ω	32-8356	A-3877	RO-302	A-2930	
T9	2700Ω	3.7Ω	188Ω	.4Ω	32-8367-1	A-3849	RO-305♦	A-2902	♦ Drill one mounting hole

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.7Ω	36-1610-2§	ST-120 MOD.P10-S■	10A31	■ Replace output transformer. to match 6-8Ω voice coil.
B			36-1507-3♦			§ Used in model 49-1175.
	CONE DIA.	V. C. DIA.				♦ Used in model 49-1150.
SP2A	9 1/2"	1"	§			
B			♦			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	PHILCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.220A	88Ω	6 Henries	32-8366	C-1721††	R-7200	C-3196	†† Drill new mounting holes.
L2	.084A	145Ω	5.5Henries	32-8355-1	C-1709♦	R-885	C-2974	♦ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		.. NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
L3A	Ant. Coil	0Ω		32-4115		Add channel number as a suffix to this part number.
B	RF Coupling	0Ω				
C	RF Coil	0Ω				
L4A	Osc. Coil	0Ω		32-4222		Add channel number as a suffix to this part number.
B	Mixer	0Ω				
L5	Osc.Plate Choke	.1Ω		32-4112-2		
L6	Osc.Plate Choke	.1Ω		32-4112-11		
L7	Fil.Choke	.1Ω		32-4112-11		
L8	Fil.Choke	.1Ω		32-4112-4		
L9	1st Video IF	.2Ω		32-4359-4		
L10	2nd Video IF	.2Ω		32-4359		
L11	3rd Video IF	.2Ω		32-4359		
L12	4th Video IF	.2Ω		32-4234-3		
L13	Adj.Channel Sound Trap	.1Ω		32-4234-4		
L14	4th Video IF Grid	.1Ω		32-4322-2		
L15	5th Video IF	.2Ω		32-4324-1		
L16	Sound Trap	0Ω		32-4302		
L17	Series Peaking	4.5Ω		32-4303		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILCO PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L18	Shunt Peaking	6.1Ω		32-4143-7		
L19	Series Peaking	6Ω		32-4143-7		
L20	Shunt Peaking	6Ω		32-4143-7		
L21	Series Peaking	5Ω		32-4143-5		
L22	Shunt Peaking	6Ω		32-4143-7		
L23	Fil. Choke	.1Ω		32-4112-11		
L24	RF Choke	.1Ω		32-4112-11		
L25	RF Choke	.1Ω		32-4112-11		
L26	Fil.Choke	.1Ω		32-4112-11		
L27	Fil.Choke	.1Ω		32-4112-11		
L28	1st Sound IF	.1Ω		32-4303		
L29	2nd Sound IF Trans.	.8Ω	.8Ω	32-4236		
L30	Ratio Det. Trans.	.1Ω	0Ω	32-4317		
L31	Fil.Choke	.1Ω		32-4112-11		
L32	Fil.Choke	.1Ω		32-4112-11		
L33	Hor. Linearity Control	18Ω		32-4211		
L34	Width Control	2.5Ω		45-9527		
L35	FM Ant.	0Ω		32-4158-1		
L36	FM RF Plate	.5Ω		32-4061-2		
L37	FM RF	0Ω		32-4159-1		
L38	RF Choke	.5Ω		32-4061-2		
L39	FM Osc. Plate	.5Ω		32-4061-2		
L40	FM Osc.	0Ω		32-4018-5		
L41	AM Loop Ant.	0Ω		32-4273-1		
L42	AM Ant. Loading	1Ω		32-4217-1		
L43	FM RF Isolating	.5Ω		32-4061-2		
L44	AM Osc.	10.5Ω		32-4221-1		
L45	FM RF Isolating	.5Ω		32-4061-2		
L46	FM 1st IF Trans.	1Ω	1Ω	32-4257		
L47	AM 1st IF Trans.	24Ω	20Ω	32-4258		
L48	FM 2nd IF Trans.	1Ω	1Ω	32-4257-1		
L49	AM 2nd IF Trans.	10Ω	10Ω	32-4160-3	16-6678	
L50	Ratio Det. Trans.	1.3Ω	.1Ω	32-4261		
L51	AM 3rd IF Trans.	15.5Ω	15.5Ω	32-4240-2	16-6670	
L52	Fil. Choke	1.1Ω				
L53	RF Choke	.5Ω		32-4061-2		

SELENIUM RECTIFIER

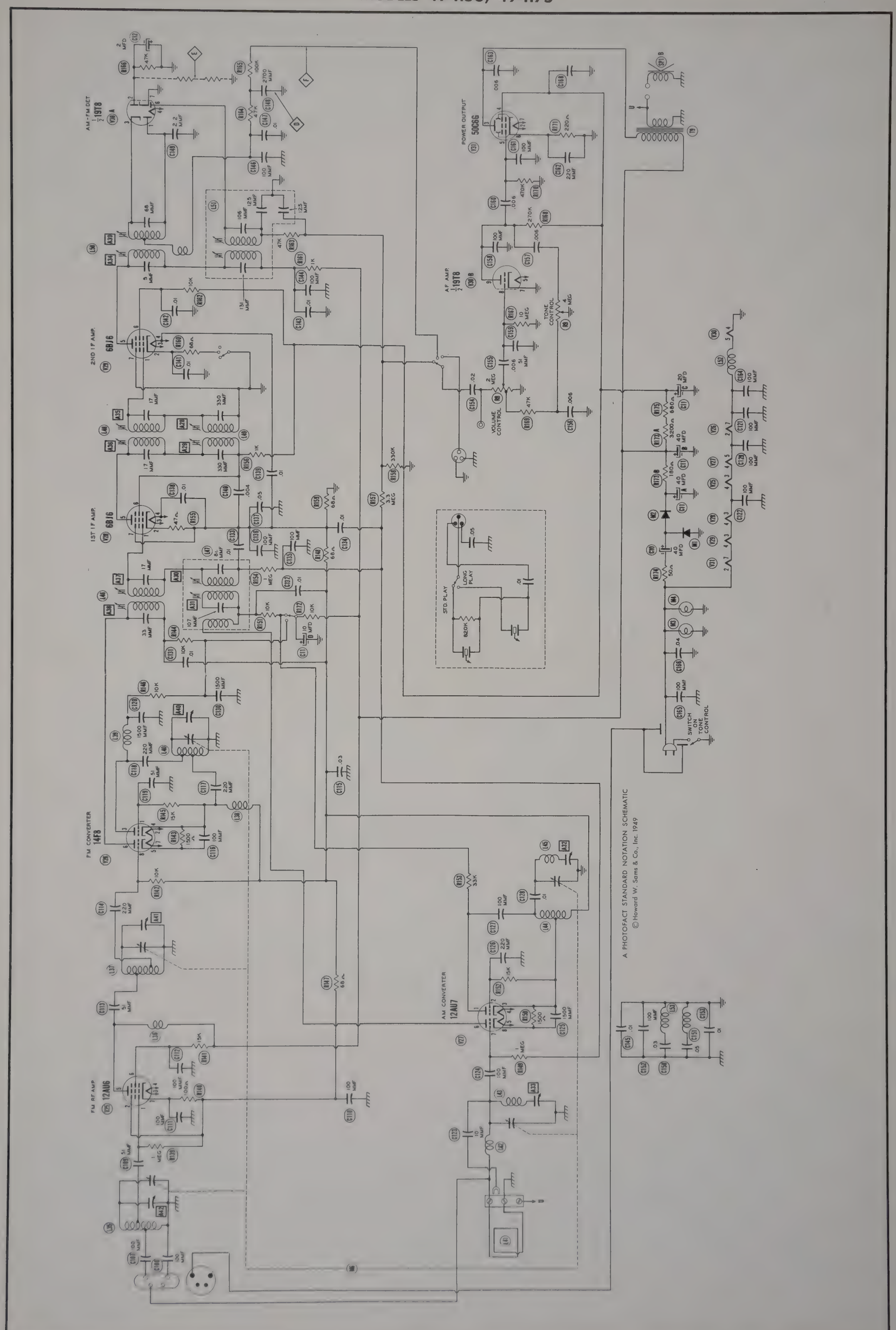
ITEM No.	RATING CURRENT	REPLACEMENT DATA PHILCO PART No.			NOTES
M1	.105A	34-8003-2			
M2	.105A	34-8003-2			

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA PHILCO PART No.		NOTES
M3	Screw	120					120V 7W
M4	Screw	120					120V 7W
M5	Bayonet	6.8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M6	Tuning Cap	31-2724-7	23-522MMF, 10-247MMF W/T
M7	Fuse	45-2656-10	3/8 Amp. Type AGX
M8	Switch	42-1863	AVC on-off switch
M9	Tuner	76-3109-2	Complete
M10	Switch	42-1874	BC-FM-Phono switch
M11	Ion Trap	76-3913	PM
	Knob	54-4376	Control, Mahogany
	Knob	54-4248	Control, Blonde
	Knob	54-4925-1	Hor. Hold Control, Mahogany
	Knob	56-4925-5	Hor. Hold Control, Blonde
	Knob	54-4567	Vert. Hold Control, Mahogany
	Knob	54-4567-1	Vert. Hold Control, Blonde
	Knob	56-4925-3	Tuner, Mahogany
	Knob	56-4925-4	Tuner, Blonde
	Core	56-3915	Tuning core for L9, L10, L11, L12, L13, L14, L15, & L16
	Back	54-7748	For radio in 49-1175
	Back	54-7711-1	For Television chassis in 49-1175
	Window	54-7848	For model 49-1175


AM-FM DET
1/2 1978
FM CONVERTER
14F8
FM RF AMP
12AU6
1ST IF AMP
6BJ6
2ND IF AMP
6BJ6
AM CONVERTER
12AU7
AF AMP
1/2 1978
POWER OUTPUT
50C6G
VOLUME CONTROL
TONE CONTROL
STD PLAY
LONG PLAY
SWITCH ON TONE CONTROL
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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HORIZONTAL HOLD ADJUSTMENTS

1. Turn B1 (Frequency Adj.) one and a half turns from the maximum clockwise position.
2. Turn B2 (Driver Adj.) two turns from the maximum clockwise position.
3. Turn B3 (Horiz. Lock Trimmer) one half turn from the maximum clockwise position.
4. Set the horizontal hold control R1A to the center of its rotation.
5. Turn in a station and adjust B4 until picture "sync".
6. Turn the AVC "off" and adjust the contrast control (R3) for normal contrast.
7. Turn the horizontal hold control fully clockwise and adjust B4 until 8 to 10 blanking bars appear on the picture tube, sloping downward from the left side.
8. If this cannot be done turn B1 one turn counterclockwise and repeat step 7.
9. Turn the horizontal hold control in the counterclockwise direction until picture "sync".
10. Keep turning the horizontal hold control in the counterclockwise direction until the picture falls out of "sync".
11. If the picture will not fall out of "sync" with the horizontal hold control turned fully counterclockwise, turn the contrast control counterclockwise until picture falls out of "sync" and then clockwise to the point where the picture reappears, but not in "sync".
12. Advance the horizontal hold control clockwise and count the number of balnking bars present. This number should decrease and synchronization is neared.
13. Just before the picture drops into "sync" there should be $3\frac{1}{2}$ to $4\frac{1}{2}$ bars sloping upward from the left side of the picture.
14. If more than $4\frac{1}{2}$ bars were present as outlined in step 13, turn B3 clockwise 1/4 turn and repeat steps 7 through 14. If less than $3\frac{1}{2}$ bars were present, turn B3 counterclockwise 1/4 turn and repeat steps 7 through 14.

PHOTOFACT* Folder

PHILCO
MODELS 49-1150, 49-1175

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MODEL 49-1175

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MODELS 730TV1, 730TV2
(CH. KCS27-1)

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MODEL 730TV1

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MODELS 730TV1, 730TV2
(CH. KCS27-1)

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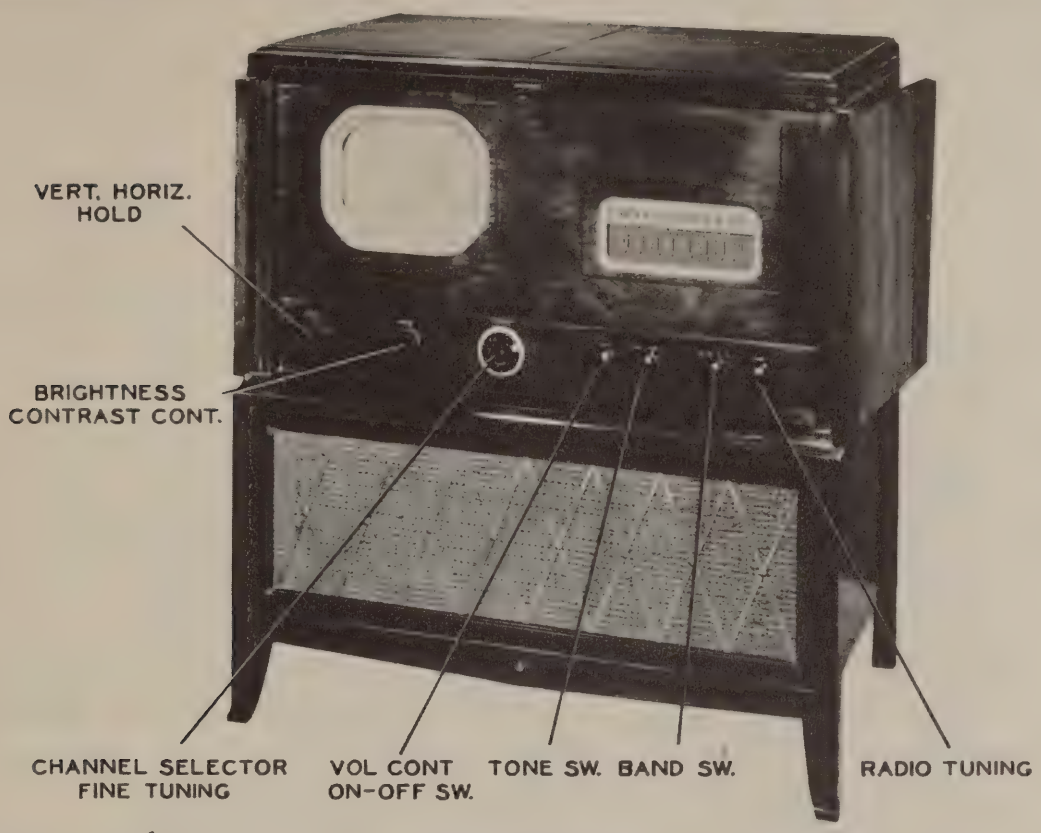
PHOTOFACT* Folder

RCA VICTOR MODELS 730TV1, 730TV2, (Ch. KCS27-1)



RCA VICTOR MODEL 730TV1

TRADE NAME	RCA Victor, Models 730TV1, 730TV2 (Ch. KCS 27-1)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	AM-FM-Phono-TV Receiver
TUBES	Thirty
POWER SUPPLY	115 Volts-60 Cycles AC
TUNING RANGE	TV Channels 1 thru 13 (44-88MC, 174-216MC) RATING: TV 2.44 Amp. @ 117 Volts AC AM 540-1600KC Radio .6 Amp. @ 117 Volts AC FM 88-108MC

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DATE 9/49 4918-7 SET #70 FOLDER 7

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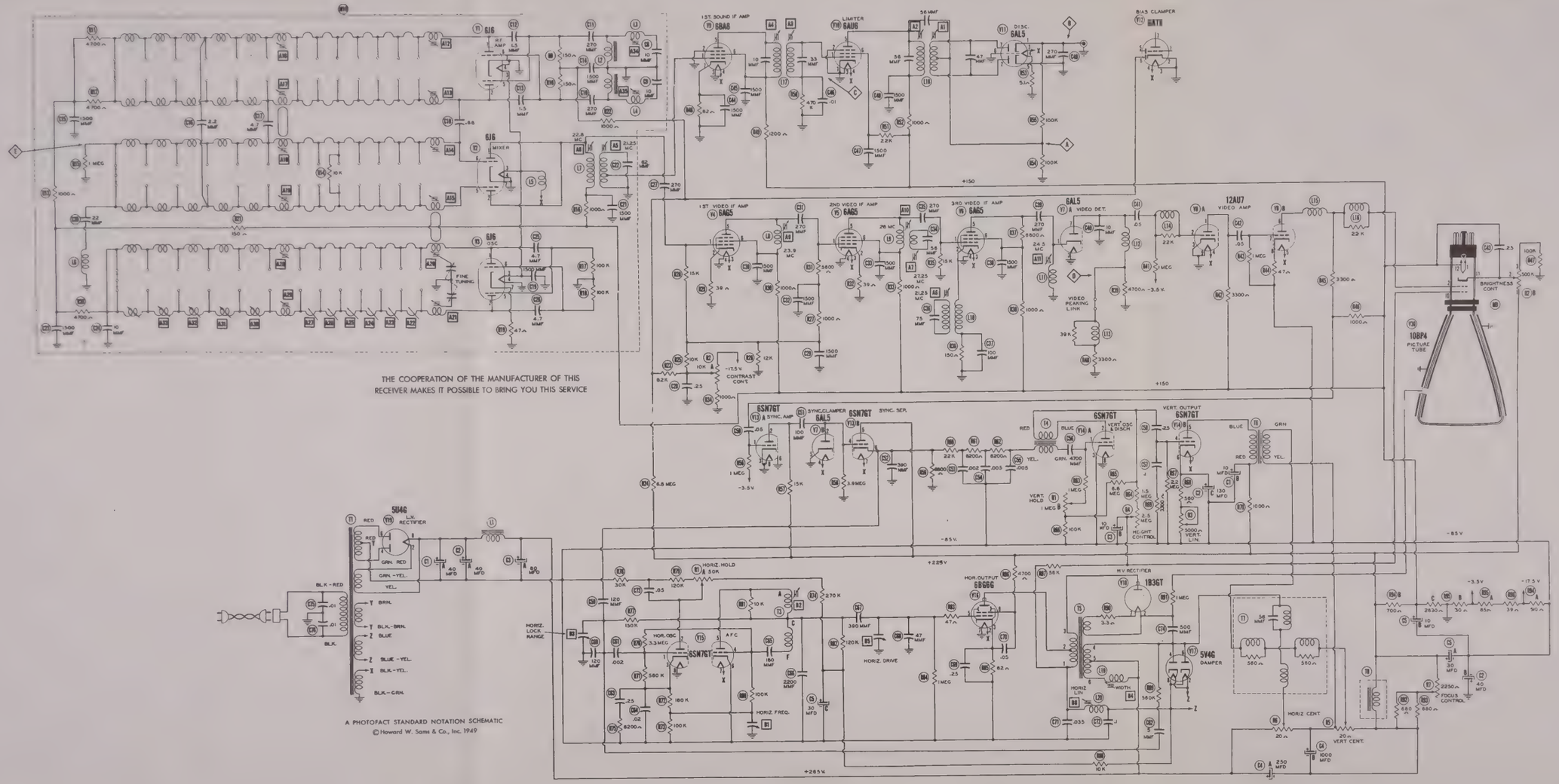
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1ST SOUND IF AMP
LIMITER
DISC.
BIAS CLAMPER
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
VIDEO DET.
VIDEO AMP
VIDEO PEAKING LINK
BRIGHTNESS CONT
10BP4
PICTURE TUBE
SYNC. CLAMPER
SYNC. SEP.
SYNC. AMP
VERT. OSC & DISCH.
VERT. OUTPUT
VERT. HOLD
HEIGHT CONTROL
VERT. LIN.
HORIZ. HOLD
HORIZ. LOCK RANGE
HOR. OSC
AFC
HORIZ. FREQ.
HORIZ. DRIVE
HOR. OUTPUT
H.V. RECTIFIER
HORIZ. LIN.
WIDTH
DAMPER
FOCUS CONTROL
HORIZ. CENT.
VERT. CENT.
RF AMP
MIXER
OSC
FINE TUNING
CONTRAST CONT.
LOW VOLTAGE RECTIFIER
RED
GRN.-RED
GRN.-YEL.
YEL.
BRN.
BLK.-BRN.
BLUE
BLUE-YEL.
BLK.-YEL.
BLK.-GRN.
BLK.-RED
BLK.
+150
+225V
+265V
-65 V.
-17.5 V.
-3.5V

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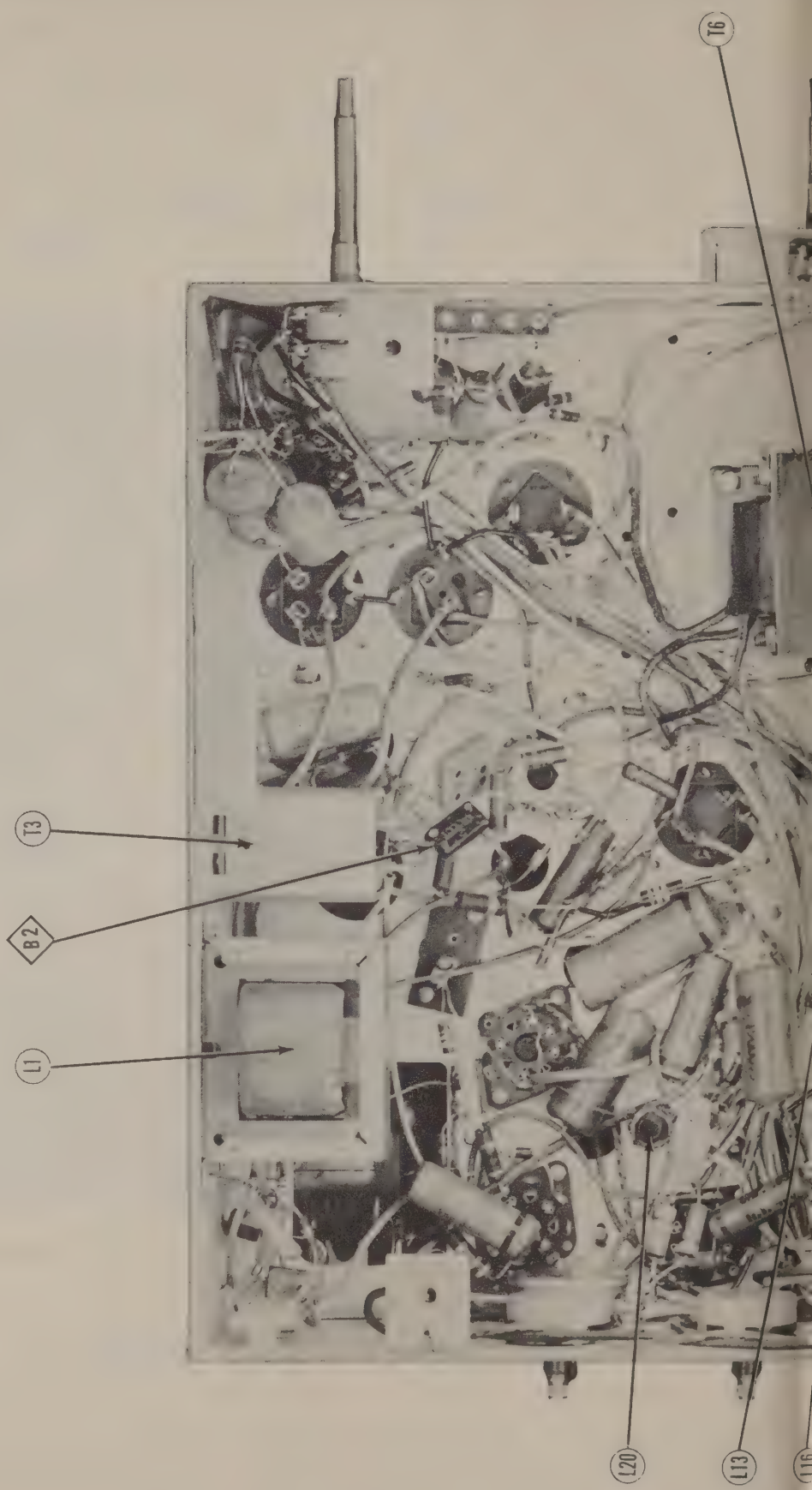


CHASSIS BOTTOM VIEW-TRANS., INDU

RCA VICTOR
MODELS 730TV1, 730TV2,
(Ch. KCS27-1)

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with picture tube removed, it is recommended to also remove the 6SN7GT (V15) horizontal oscillator tube to eliminate high voltage shock hazard.
When complete alignment is to be performed, it can most conveniently be done in the order outlined.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V10) Low side to chassis.	21.25MC (Unmod.)	13	DC Probe thru 1 Meg to Point (A) Common to chassis.	A1,A2	Detune A1. Adjust A2 for maximum deflection.
2.	.05MFD	"	"	"	DC Probe thru 1 Meg to Point (B) Common to chassis.	A1	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	.05MFD	High side to pin 1 (Grid) of 6BA6 (V9). Low side to chassis.	"	"	DC Probe thru 1 Meg to Point (C) Common to chassis.	A3,A4	Adjust for maximum deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (Grid) of 6BA6 (V9). Low side to chassis.	21.25MC (1MC Sweep)	21.25MC	13	Vert. Amp. to Point (C) Low side to chassis.	A3,A4	If 60\ sweep rate is used shunt R50 with 5600Ω. Adjust A3 and A4 for maximum amplitude and symmetry as per Fig 1.
2.	.05MFD	"	"	"	"	Vert.Amp. to Point (B) Low side to chassis.	A1,A2	Adjust A2 for maximum amplitude and straightness of diagonal line as per Fig 2. Adjust A1 so 21.25MC marker is at center of diagonal line. Continue with step 4.

VIDEO IF ALIGNMENT

Before starting video IF alignment connect VTVM between junction of R25 and R26 and chassis. Adjust contrast control to give VTVM reading of -3V. Leave contrast control at this setting for entire video IF alignment.
Remove 6J6 local oscillator tube V3 to prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.		High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	21.25MC	13	DC Probe to Point (D) Common to chassis.	A5,A6	Adjust for minimum deflection.
5.		"	27.25MC	"	"	A7	Adjust for minimum delfection. (Some models may not have this trap.)
6.		"	22.8MC	"	"	A8	Adjust for maximum deflection.
7.		"	23.9MC	"	"	A9	" " " "
8.		"	26.0MC	"	"	A10	" " " "
9.		"	24.5MC	"	"	A11	" " " "

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.		High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC Sweep)	21.25MC 23.0MC 25.0MC 25.75MC 27.25MC	13	Vert. Amp. to Point (D) Low side to chassis.		Check response curve obtained on scope. If necessary, slightly retouch A5 thru A11 for proper wave shape and placement of markers as per Fig 3.

RF AMP. & MIXER ALIGNMENT

Before starting RF alignment connect VTVM to junction of R25 and R26 and chassis and adjust contrast control to give VTVM reading of -1V. Leave contrast control at this setting for entire RF alignment.
Connect a 1000MMFD capacitor from pin 1 of 6AG5 1st Video IF Amp (V4) to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon res.	Across antenna terminals with 120Ω resistor in each generator lead.	177MC (10MC Sweep)	175.25MC 179.75MC	7	Vert. Amp. thru 10KΩ to Point (E) Low side to chassis.	A12,A13 A14,A15	Adjust for approximately flat topped response curve as per Fig 4. Markers must be above 70%. Keep slug pairs in same relative positions.
12.	"	"	183MC (10MC Sweep) 189MC (10MC Sweep) 195MC (10MC Sweep) 201MC (10MC Sweep) 207MC (10MC Sweep) 213MC (10MC Sweep)	181.25MC 185.75MC 187.25MC 191.75MC 193.25MC 197.75MC 199.25MC 203.75MC 205.25MC 209.75MC 211.25MC 215.75MC	8 9 10 11 12 13	"		Check to see that response is as above. Slight readjustment of A12, A13,A14,A15 may be necessary to obtain optimum response for all high band channels.

TV ALIGNMENT INSTRUCTIONS (CONT.)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	"	"	85MC (10MC Sweep)	83.25MC 87.75MC	6	"	A16,A17 A18,A19	Adjust for approximately flat topped response curve as per Fig 4. Markers must be above 70%. Keep slug pairs in approximately same relative position.
14.	"	"	79MC (10MC Sweep) 69MC (10MC Sweep) 63MC (10MC Sweep) 57MC (10MC Sweep)	77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	5 4 3 2	"		Check to see that response is as above. Slight readjustment of A16, A17,A18,A19 may be necessary to obtain optimum performance on all low band channels.

OSCILLATOR ALIGNMENT

Replace oscillator tube (V3).
Set fine tuning control to the mid-point of its tuning range.
The sound IF system must be accurately aligned before starting the oscillator alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
15.	Two 120Ω carbon res.	Across antenna terminals with 120Ω resistor in each lead.	215.75MC	13	DC Probe thru 1 Meg to Point Ⓑ Common to chassis.	A20,A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Keep slug pairs in same relative position.
16.	"	"	209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC	12 11 10 9 8 7	"	A22 A23 A24 A25 A26 A27	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
17.	"	"	87.75MC	6	"	A28 A29	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Keep slug pairs in same relative position.
18.	"	"	81.75MC 71.75MC 65.75MC 59.75MC	5 4 3 2	"	A30 A31 A32 A33	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

WAVE TRAP ADJUSTMENT

Wave traps A34 and A35 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference set fine tuning control until interference is at maximum. Adjust A34 and A35 for minimum interference in the picture and sound. Keeping the cores at approximately the same relative position. Turn one core 1/2 turn, adjust the other for minimum interference.

FIG. 1

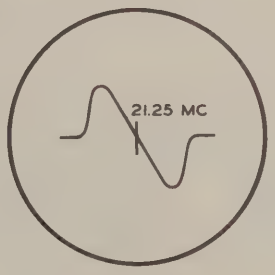


FIG. 2

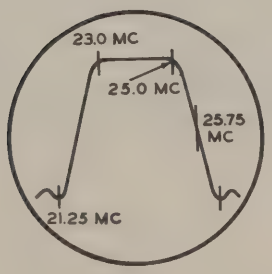


FIG.3

FIG. 4

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

When complete receiver alignment is to be performed align the FM IF Amp. before aligning AM IF Amps. To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point ⓔ to chassis. The junction of these two resistors is alignment Point ⓗ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
19	.01MFD	High side to pin 1 (Grid) of 6AU6 (V23). Low side to chassis.	10.7MC (Unmod.)	FM (Ext. clock-wise.)	Tuning gang fully closed	DC Probe to Point ⓔ Common to chassis.	A36	Adjust for maximum deflection.
20	.01MFD	"	"	"	"	DC Probe to Point ⓖ Common to Point ⓗ	A37	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 19 and 20 if A37 required much adjustment.
21	.01MFD	Across antenna terminals.	10.7MC	"	"	DC Probe to Point ⓔ Common to chassis.	A38, A39, A40, A41	Adjust for maximum deflection. Alternately load the primary and secondary windings of the IF transformers with 680Ω while the opposite side of the same transformer is being adjusted.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
19	.01MFD	Across antenna terminals.	10.7MC (450KC Sweep)	FM	Tuning gang fully closed	Vert. Amp. to Point ⓔ Low side to chassis.	A36, A38, A39, A40, A41	Disconnect stabilizer C7. Adjust for maximum amplitude and symmetry as per Fig 5.
20	.01MFD	"	"	"	"	Vert. Amp. to Point ⓖ Low side to chassis.	A37	Reconnect stabilizer cap C7. Adjust A37 so crossover point occurs at center of pattern as per Fig 6. Slightly retouch A36 for maximum amplitude and straightness of crossover lines. Continue with step 22.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
22	Two 120Ω carbon res.	Across antenna terminals with 120Ω resistor in each lead.	106MC	FM	106MC (5 3/4" to right of left hand calibration mark at low freq. end of dial back plate).	DC Probe to Point ⓔ Common to chassis.	A42, A43	Adjust for maximum deflection.
23	"	"	90MC	"	90MC (1 1/8" to right of the reference point listed above).	"	A44, A45	"

AM ALIGNMENT

FM IF alignment must be complete before starting AM alignment. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
24	.01MFD	High side to pin 7 (Grid) of 6BE6 (V21). Low side to chassis.	455KC (400∿ Mod.)	AM (3 positions clock-wise)	Tuning gang fully closed	Across voice coil	A46, A47, A48, A49	Adjust for maximum output. Alternately load the primary and secondary windings of the AM IF transformers with 47KΩ while the opposite side of the same transformer is being aligned.
25	200MMFD	High side to terminal 2 of antenna terminal strip. Low side to chassis.	1400KC	"	1400KC (5 15/16" to the right of left hand calibration mark at low freq. end of dial back plate).	"	A50, A51	Adjust for maximum output.
26	200MMFD	"	600KC	"	600KC (1 1/4" to the right of the reference point listed above.	"	A52, A53	Adjust for maximum output. Repeat steps 24 and 25.

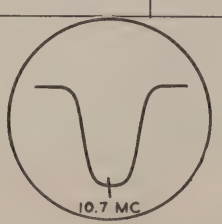
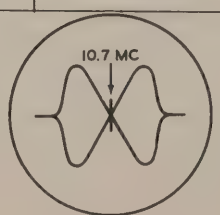
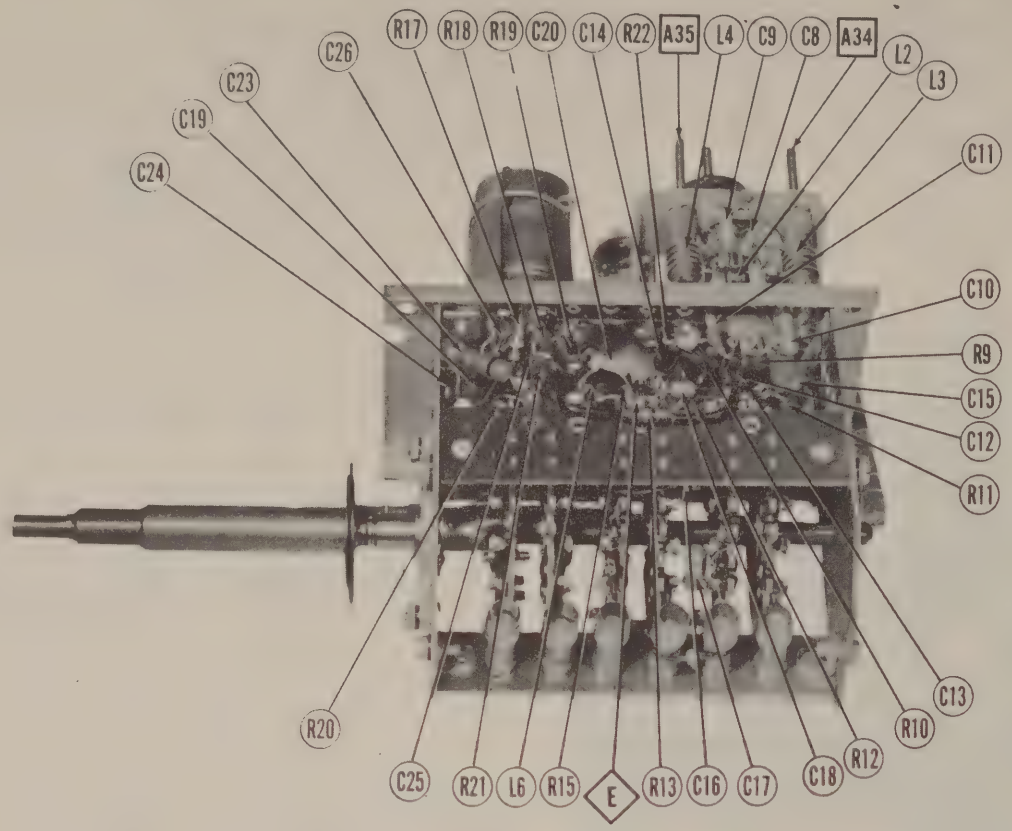


FIG. 5

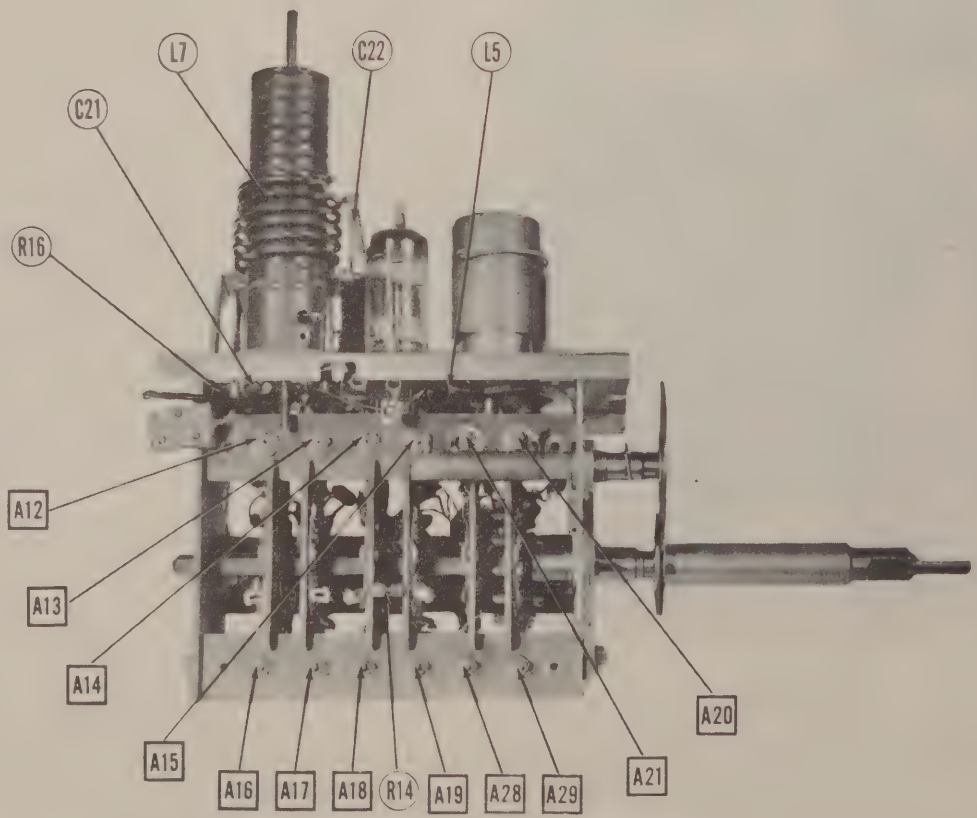
FIG. 6



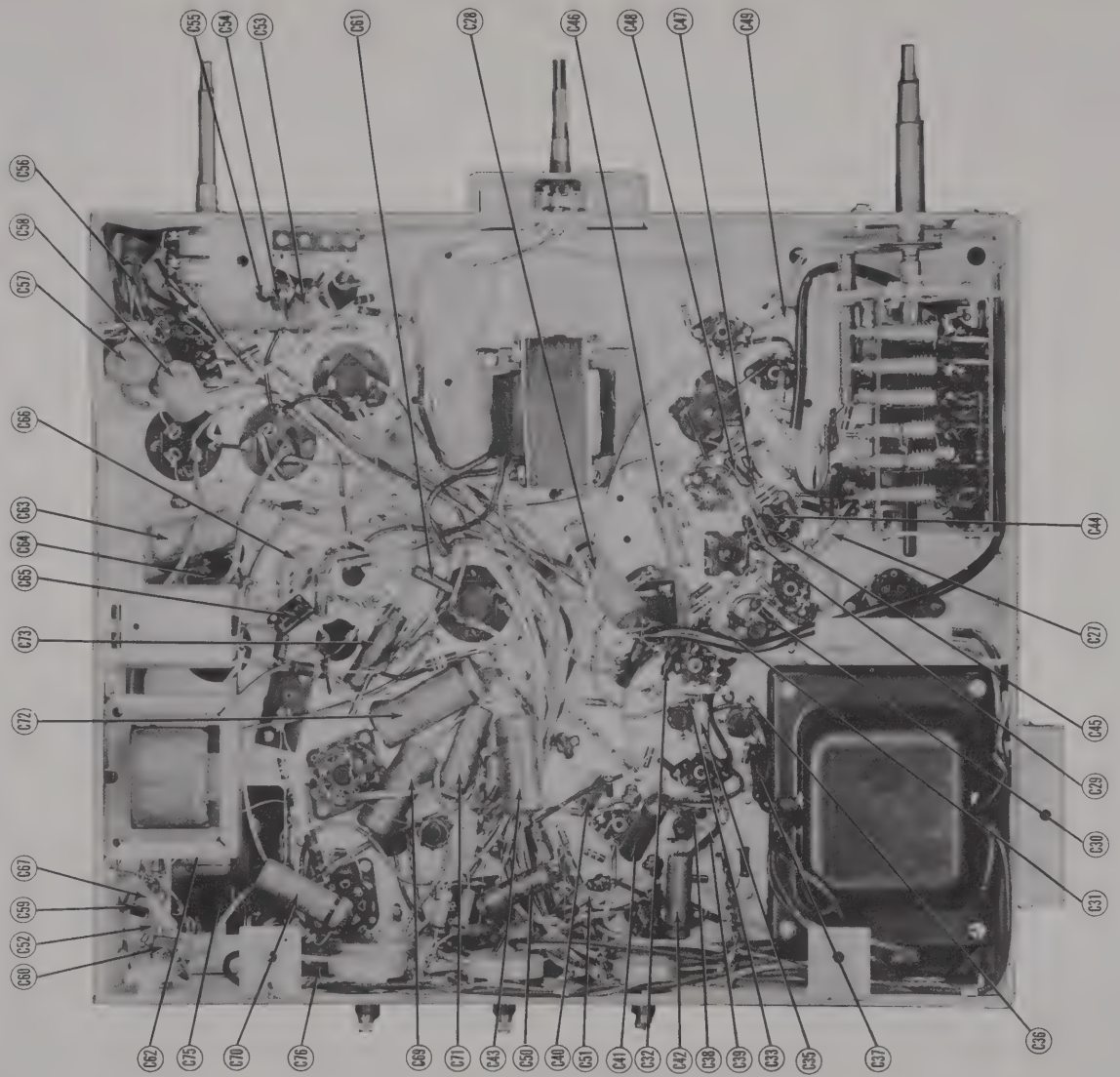
TOR AND ALIGNMENT IDENTIFICATION



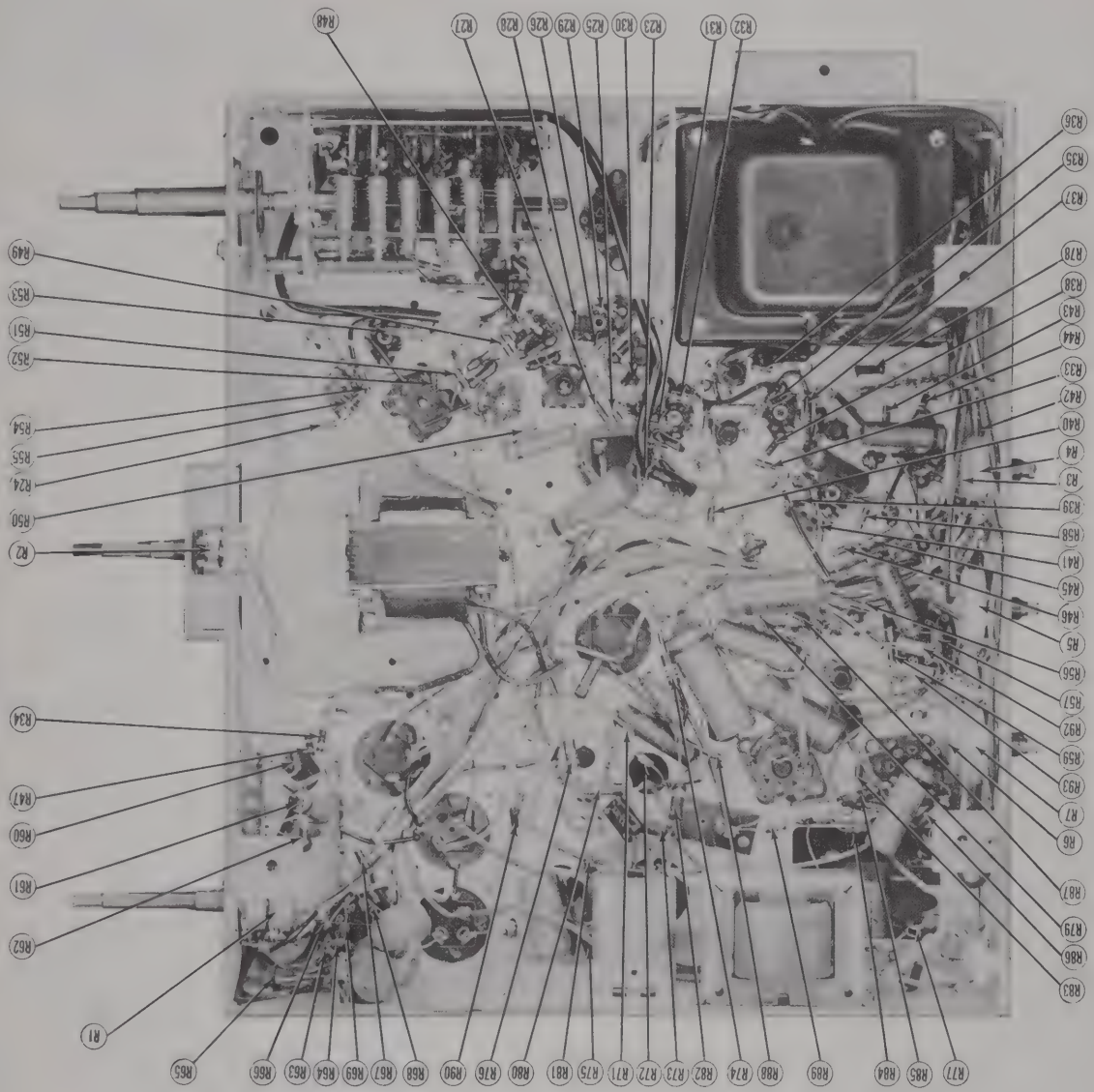
RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF Amp	6AG5	6AG5	7BD	
V5	2nd Video IF Amp	6AG5	6AG5	7BD	
V6	3rd Video IF Amp	6AG5	6AG5	7BD	
V7	Video Det.-Clamper	6AL5	6AL5	6BT	
V8	Video Amp.	12AU7	12AU7	9A	
V9	1st Sound IF Amp.	6BA6	6BA6	7BK	
V10	Limiter	6AU6	6AU6	7BK	
V11	Discriminator	6AL5	6AL5	6BT	
V12	Bias Clamper	6AT6	6AT6	7BT	
V13	Sync. Amp.-Sync. Sep.	6SN7GT	6SN7GT	8BD	
V14	Vert. Osc. and Disch.-Vert. Output	6SN7GT	6SN7GT	8BD	
V15	Hor. Osc.-AFC	6SN7GT	6SN7GT	8BD	
V16	Hor. Output	6BG6G	6BG6G	5BT	
V17	Damper	5V4G	5V4G	5L	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	
V20	FM Conv.	6BE6	6BE6	7CH	
V21	AM Conv.	6BE6	6BE6	7CH	
V22	1st IF Amp.	6BA6	6BA6	7BK	
V23	2nd IF Amp.	6AU6	6AU6	7BK	
V24	Ratio Det.	6AL5	6AL5	6BT	
V25	Det.-AVC-Phase Inv.	6SQ7	6SQ7	8Q	
V26	AF Amp.	6SQ7	6SQ7	8Q	
V27	Power Output	6K6GT	6K6GT	7S	
V28	Power Output	6K6GT	6K6GT	7S	
V29	Rectifier	5Y3GT	5Y3GT	5T	
V30	Picture Tube	10BP4	10BP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA					IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450	71782	AF82J2H‡	UP7BJ 920		TVL-69	◓ Filter
B	10	350						▲ Vert. Output Dec.
C2A	40	450	71781	AF88J26B	UP9CJ 887		D-12647	◓ Filter
B	40	150						■ Filter
C	130	50						▲ Vert. Output Cath.Byp.
C3A	80	450	71780	AF164J	UP9BJ 857		TVL-47	◓ Filter
B	10	450						▲ Vert. Osc. Decoupling
C4A	250	10	71436	AF50R200S	UP7BJ 808		TVL-66	◓ Hor. Cent. Cont. Byp.
B	1000	6						▲ Vert.Cent. Cont. Byp.
C5A	30	350	72736	AF862J4A‡	UP8CJ 898		TVL-56	■ Filter
B	10	400						◓ Filter
C	30	250						▲ Decoupling
C6A	30	450	72052	AF66J4A	UP2245 CC		EL330	◓ Filter
B	30	350					TVA-6	■ Filter
C	40	25						▲ Output Cath. Bypass
C7	5	50	72121	PRS150/4	BBR5-50T		TVA-13	Stabilizing Cap.
C8	10					NPOK-10		Fixed Trimmer *
C9	10					NPOK-10		Fixed Trimmer *
C10	270		71540			GP2K-250		RF Coupling
C11	270		71540			GP2K-250		" "
C12	1.5		71500			NPOK-1.5		Neutralizing
C13	1.5		71500			NPOK-1.5		"
C14	1500		71501			GP2L-0015		Bias Filter
C15	1500		71501			GP2L-0015		RF Plate Decoupling
C16	2.2		71502					RF Coupling
C17	4.7		71520					" "
C18	.68		71504					" "
C19	1500		71501			GP2L-0015		Filament Bypass
C20	22		33101					Fixed Trimmer
C21	1500		71501			GP2L-0015		Conv. Plate Dec.
C22	62							Fixed Trimmer
C23	1500		71501			GP2L-0015		Osc. Plate Decoupling
C24	10		45466			GP1K-10		" "
C25	4.7		71520					Osc. Feedback
C26	4.7		71520					" "
C27	270	500	65401	1468-00025	5W5T25	GP2K-250	1FM-325	IF Coupling
C28	.25	200	70618	P488-25	GT2P25		TC-2	Bias Filter
C29	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	Bias Filter
C30	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	1st V. IF Decoupling
C31	270	1000	73091	1468-00025	5W5T25	GP2K-250	1FM-325	IF Coupling
C32	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	Bias Filter
C33	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	2nd V. IF Decoupling
C34	56							Fixed Trimmer *
C35	270	1000	73091	1468-00025	5W5T25	GP2K-250	1FM-325	IF Coupling
C36	75			1469-000075		NPOM-75		Fixed Trimmer
C37	100		45469	1468-0001	5W5T1	GP1K-100	1FM-31	3rd V. IF Cath. Bypass
C38	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	3rd V. IF Decoupling
C39	270	1000	73091	1468-00025	5W5T25	GP2K-250	1FM-325	IF Coupling
C40	10	500	72615	1468-00001	5W5Q1	GP1K-10	MS-41	V. Diode Filter
C41	.05	400	70615	P488-05	GT4S5		TM-15	Video Coupling
C42	.05	400	70615	P488-05	GT4S5		TM-15	Video Coupling
C43	.25	200	70618	P488-25	GT2P25		TC-2	Pic. Tube Cath. Dec.
C44	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Cath. Bypass
C45	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	1st S. IF Decoupling
C46	.01	400	70610	P488-01	GT4S1	GP2-335-01	TM-11	Limiter Grid Filter
C47	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	Limiter Screen Bypass
C48	1500		71501	1467-0015	1W5D15	GP2L-0015	1FM-215	Limiter Plate Dec.
C49	270	1000	73091	1468-00025	5W5T25	GP2K-250	1FM-325	RF Bypass
C50	.05	400	70615	P488-05	GT4S5		TM-15	Video Coupling
C51	100	500	39628	1468-0001	5W5T1	GP1K-100	1FM-31	Sync. Coupling
C52	390	1000	73094	1468-0004	5W5T4		1FM-34	Sync. Amp. Cath. Bypass

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA RCA PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
			70601				TM-22	Integrator Net.
			70606				TM-22	" "
								Vert. Osc. Grid Cap.
								Vert. Discharge
							TC-2	Vert. Sweep Coupling
								Hor. Sync. Coupling
								Voltage Divider
							TM-12	Hor. Sync. Coupling
								AFC Feedback
			P488-25				TC-2	AFC Filter
			P488-02				TM-12	" "
								Hor. Osc. Grid Cap.
								Hor. Discharge
			1469-0004				MS-34	Hor. Sweep Coupling
			1469-00005				1FM-48	Voltage Divider *
			P488-25				TC-2	Hor. Output Cath. Byp.
			P688-05				TM-15	Hor. Output Screen Byp.
								Damper Filter
								" "
			P688-36				TM-15	AFC Plate Bypass
								HV Filter
			P488-01				TM-11	Line Filter
			P488-01				TM-11	" "
								Osc. Grid Cap.
								FM Osc. Anode Bypass
			P488-01				TM-11	FM Osc. Plate Dec.
			1469-001				1FM-41	Voltage Divider *
			1469-00005				1FM-48	Ant. Coupling
								Fixed Trimmer
			1468-00015				1FM-318	RF Coupling
			1468-00005				1FM-48	Osc. Grid Cap.
			1469-0004				MS-34	Fixed Padder
			P488-01				TM-11	AM Osc. Anode Bypass
			P688-05				TM-15	AVC Filter
			1468-00005				1FM-48	AM Conv. Fil. Bypass
			P688-005				TM-25	1st IF Screen Bypass
			P688-005				TM-25	1st IF Decoupling
			P688-005				TM-25	De-emphasis
			P688-005				TM-25	2nd IF Cath. Bypass
			P688-005				TM-25	2nd IF Screen Bypass
			P688-005				TM-25	2nd IF Plate Dec.
			P488-01				TM-11	RF Bypass
			1468-0003				1FM-328	Diode Load Cap. †
			1468-0003				1FM-328	" " " †
			P688-005				TM-25	RF Bypass
			P688-005				TM-25	" "
			P688-005				TM-25	De-emphasis
			P688-005				TM-25	AVC Filter
			P688-005				TM-25	Audio Coupling
			72120					Tone Compensation
			72120					Tone Compensation
			72120					" "
			72573				TM-23	" "
			72573				TM-23	" "
			71625				TM-11	Audio Coupling
			71614				1FM-318	AF Plate Bypass
			71625				TM-11	Audio Coupling
			72490				TM-25	" "
			70611				TM-12	" "
			70646				MS-23	Output Plate Bypass
			70646				MS-23	" "
			72874				TM-23	Line Filter

* Not used in all models.
† When either Item C95 or C96 are replaced, replace both with capacitors of equal value.
‡ Omit bypass section.
# Omit one 10MFD section.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	1 Meg.	½	72834		970111-24	Horiz. Hold Control (Dual Concentric)
R2	470K	½				Vert. Hold Control
R3	470K *	½	71744 *		970111-18	Contrast Control (Dual Concentric)
						Brightness Control
R4	470K §	½	73103 §		970111-18	Contrast Control (Dual Concentric)
						Brightness Control
R5	1 Meg.	½	71441	Q11-114	M-16-S	Vert. Linearity Control
R6	Not Req.		Not Req.		Not. Req.	Attach to R3A Per Instructions (Dual Concentric)
R7	2.5 Meg	½	71447	Q11-287		Height Control
R8	470K	½	71446	W-20X10	43-2007	Vert. Centering Control, Tapped ⑤ 10Ω Wire Wound
R9	10K	½	71614	W-25X10	43-220	Horiz. Centering Control, Wire Wound
R10	2.5 Meg	½	72085		P-10-2500	Focus Control, Wire Wound
R11	2.5 Meg	½	72881	Q16-139XX	T-65	Volume Control
R12	Not Req.	½	Not Req.		T-1	Attach to R8A Per Instructions

§ Used only when Decal. Part #73196 or 73197 is used.
* Used only when Decal. Part #73028 or 73045 is used.

RESISTORS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R1	1 Meg.	½			RF Grid 20%
R2	470K	½			" " 20%
R3	1.2 Meg.	½			RF Plate 20%
R4	10K	½			" " 20%
R5	10K	½			RF Plate Decoupling 20%
R6	1K	½			Mixer Grid Shunt
R7	100K	½			Mixer Grid 20%
R8	100K	½			Mixer Plate Decoupling 20%
R9	100K	½			Osc. Grid 20%
R10	100K	½			" " 20%
R11	100K	½			Osc. Cathode 20%
R12	100K	½			Osc. Plate 20%
R13	100K	½			Decoupling Network 20%

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R14	1 Meg.	½		BTS-1000	Bias Network 20%
R15	68K	½		" "	" "
R16	1.2 Meg.	½		BTS-6.8 Meg.	" " 20%
R17	10K	½		BTS-10K	" "
R18	1K	½		BTS-12K	" "
R19	100K	½		BTS-1000	20%
R20	1K	½			1st Video IF Grid 5%
R21	5K	½			1st Video IF Cathode
R22	10002	½			1st Video IF Decoupling 20%
R23	5600Ω	½			2nd Video IF Grid 5%
R24	39Ω	½			2nd Video IF Cathode
R25	10002	½			2nd Video IF Decoupling 20%
R26	10002	½		BTS-1000	Voltage Divider
R27	15K	½			3rd Video IF Grid 5%
R28	1502	½			3rd Video IF Cathode
R29	6800Ω	½			3rd Video IF Plate 5%
R30	10002	½			3rd Video IF Decoupling 20%
R31	470Ω	½		BTS-4700-5%	Video Det. Diode Load 5%
R32	33002	½		BTS-3300-5%	" " " " 5%
R33	1 Meg.	½		BTS-1 Meg.	Video Amp. Grid 20%
R34	330Ω	½		BTS-3300	Video Amp. Plate
R35	1 Meg.	½		BTS-1 Meg.	Video Output Grid 20%
R36	47Ω	½		BW-½-47	Video Output Cathode 20%
R37	330Ω	1		BTA-3300	Video Output Plate
R38	1000Ω	½		BTS-1000	" "
R39	100KΩ	½		BTS-100K	Voltage Divider
R40	820Ω	½			1st Sound IF Cathode 20%
R41	1.2KΩ	½			1st Sound IF Decoupling 20%
R42	22KΩ	½			2nd Sound IF Grid 20%
R43	1000Ω	½			2nd Sound IF Screen Decoupling 20%
R44	5.1Ω	½	72067	BW-½-4.7	2nd Sound IF Plate Decoupling 20%
R45	100KΩ	½		BTS-100K-5%	Disc. Filament Wire Wound
R46	100KΩ	½		BTS-100K-5%	Disc. Diode Load 5%
R47	1 Meg.	½		BTS-1 Meg.	" " 5%
R48	1 Meg.	½		BTA-15K	Sync. Amp. Grid 20%
R49	3.9 Meg.	½		BTS-3.9 Meg.	Sync. Amp. Plate 20%
R50	6800Ω	½		BTS-6800	Sync. Sep. Grid 20%
R51	22KΩ	½		BTS-22K	Sync. Sep. Cathode 20%
R52	1000Ω	½		BTS-8200	Integrator 20%
R53	8200Ω	½		BTS-8200	"
R54	6800Ω	½		BTS-6800	"
R55	1 Meg.	½		BTS-1 Meg.	Filter
R56	1.5 Meg.	½		BTS-1.5 Meg.	Vert. Osc. Grid 5%
R57	6.8 Meg.	½		BTS-6.8 Meg.	Vert. Osc. Plate
R58	100KΩ	½		BTA-100K	Voltage Divider
R59	2.2 Meg.	½		BTS-2.2 Meg.	" "
R60	560Ω	½		BTS-560	Vert. Output Grid 20%
R61	330Ω	½		BTS-3300	Vert. Output Cathode
R62	1000Ω	½		BTS-1000	Vert. Peaking 20%
R63	560Ω	½		BTS-560K-5%	Filter 20%
R64	180KΩ	½		BTS-180K	Horiz. AFC Grid 5%
R65	100KΩ	½		"	Horiz. AFC Cathode
R66	270KΩ	1		BTA-270K	" Temp. Comp.
R67	8200Ω	1		BTS-8200	Horiz. AFC Plate
R68	3.3 Meg.	1		BTA-3.3Meg-5%	Horiz. AFC Filter Network 20%
R69	150KΩ	½		BTS-150K	Voltage Divider
R70	30KΩ	½	72928		Feedback
R71	120KΩ	½		BTS-120K	Voltage Divider Temp. Comp.
R72	100KΩ	½	72893		"
R73	10KΩ	½		BTS-10K	Horiz. Osc. Grid Carbon Film Type 1%
R74	120KΩ	½		BTA-120K	Horiz. Osc. Transformer Shunt
R75	47Ω	½			Horiz. Osc. Plate
R76	1 Meg.	½		BTS-1 Meg.	Parasitic Suppressor 20%
R77	82Ω	1		BW-1-82	Horiz. Output Grid 20%
R78	47KΩ	1		BTS-47KΩ	Horiz. Output Cathode
R79	56KΩ	½		BTS-56K	Horiz. Output Screen
R80	10KΩ	½		BTS-10K	Feedback
R81	560KΩ	½		BTS-560K	Filter
R82	3.3Ω	7	71513		Feedback
R83	1 Meg.	½			HV Rect. Filament Wire Wound
R84	680Ω	1		BTA-680	HV Filter
R85	680Ω	1		BTA-680	Focus Coil Shunt 20%
R86A	510Ω	10	72848	AB-500	" " 20%
B	700Ω	12		DO-700	Bias Network Wire Wound
R86A	8Ω	2		BW-2-82	Filter Wire Wound
B	30Ω	1	72849	BW-1-30	Bias Network Wire Wound
C	2.2Ω	7		AB-3000	Voltage Divider Wire Wound
R86	3Ω	1		BW-1-39	Bleeder Wire Wound
R87	1 Meg.	½		BTS-1 Meg.	Bias Network See Note
R88	100Ω	½		BTS-1000	FM Ant. Isolation 20%
R89	22KΩ	½		BTS-22K	FM Conv. Decoupling 20%
R90	820Ω	½		BTA-8200	FM Osc. Grid
R101	68K Ω	½		FM Osc. Plate	
R102	2.2 Meg.	½		BTS-2.2 Meg.	FM Osc. Plate
R103	22KΩ	½		BTS-22K	AM Conv. Grid 20%
R104	18KΩ	½		BTS-18K	AM Osc. Grid
R105	47Ω	½		BW-½-47	AM Osc. Plate
R106	22KΩ	½		BTA-22K	1st IF Cathode
R107	2200Ω	½		BTA-2200	1st IF Screen
R108	2.2 Meg.	½		BTS-2.2 Meg.	1st IF Decoupling 20%
R109	270KΩ	½		BTS-270K	AVC Network 20%
R110	270KΩ	½		BTS-270K	" "
R111	68Ω	½		BW-½-68	Diode Load
R112	33KΩ	½		BTS-33K	2nd FM IF Cathode
R113	1000Ω	½		BTS-1000	2nd FM IF Screen Decoupling
R114	100Ω	½		BW-½-100	2nd FM IF Plate Decoupling 20%
R115	15KΩ	½		BTS-15K	Balancing
R116	910Ω	½		BTS-1000-5%	De-emphasis
R117	820Ω	½		BTS-820-5%	Balancing 5%
R118	10KΩ	½		BTS-10K	" 5%
R119	1.1 Meg.	½		BTS-1.5 Meg.	Ratio Det. Diode Load
R120	22 Meg.	½		BTS-22 Meg.	AVC Network 20%
R121	27KΩ	½		BTS-27K	Delayed AVC 20%
R122	27KΩ	½		BTS-27K	Tone Compensation
R123	220KΩ	½		BTS-220K	" "
R124	470KΩ	½		BTS-470K	" "
R125	10 Meg.	½		BTS-10 Meg.	Phase Inv. Grid 20%
R126	270KΩ	½		BTS-270K	Phase Inv. Plate 20%
R127	10 Meg.	½		BTS-10 Meg.	AF Grid 20%

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R128	270KΩ	½		BTS-270K	AF Plate
R129	470KΩ	½		BTS-470K	Output Grid
R130	82002	½		BTS-8200	" "
R131	470KΩ	½		BTS-470K	" "
R132	5602	2	72865	BW-2-560	Output Cathode Wire Wound
R133	1002	½			Parasitic Suppressor
R134	33002	2		BW-2-3300	Filter
R135	33002	2		BW-2-3300	"

Note. Used only when Ion trap magnet coil is not used.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1A	117VAC ⑤ 1.84A	720VCT ⑤ .24A DC SEC. 4 6.3VAC ⑤ 7.1A	5VAC ⑤ 3A SEC. 5 6.3VAC ⑤ .6A	5VAC ⑤ 2A	71772	P-8153	TP-392	P-3059
B					73150 ‡ ‡			
T2	117VAC ⑤ .6GA	680VCT ⑤ .073 APC	5VAC ⑤ 2A	6.3VAC ⑤ 3.9A	71975	P-6012 # ††	PM-70B # ††	P-2951 #

†† Add series resistor to reduce plate voltage.
# Drill new mounting holes.
‡‡ 50Ω, transformer.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	NOTES
T3	1.17Ω Tap ⑤ 35Ω		72770				Hor. Osc. Coil
T4	16Ω	1310Ω	71775	A-8121	T30-1	A-4000	Vert.Block. Osc.Trans
T5	41Ω Tap ⑤ 170Ω	SEC. 1 10.6Ω Tap ④ .5Ω SEC. 2 .02Ω	71416	A-8117	TF8-1		Hor. Output Trans.
T6	890Ω	72Ω	71774	A-8115	TS0-1	A-3035	Vert. Output Trans.
T7A	14Ω		71420	DY-1			Hor.Deflection Coil
B	65Ω						Vert.Deflection Coil
T8	265Ω		73233	FC-10			Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T9	12KΩ CT	2.5Ω	630Ω CT .2Ω	37899	A-3083	RO-111	A-2961	

SPEAKER

ITEM No.	RATING FIELD. RES.	RATING V. C. IMP.	REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	2.5Ω	71961	ST-102 § MOD.P12-S	12A4A	§ Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	V. C. DIA.				
SP2	12"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
L1	.240A	64Ω	2.5Henries	71970	C-2326	TR-4226	C-2991	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	MEISSNER PART No.	NOTES
L2	Ant. Input	0Ω		71507		Part of Tuner
L3	Inter-ference Trap	0Ω				" " "
L4	Inter-ference Trap	0Ω				" " "
L5	Fil. Chk.	0Ω		71505		" " "
L6	Mixer Grid Trap	0Ω		71506		" " "
L7	1st Video IF and Sound Trap	.22Ω	0Ω	72811		Includes 62MMF capacitor. Part of tuner.
L8	2nd Video IF	.1Ω		71426		
L9	3rd Video IF	.1Ω		73708		Trap winding not used in all receivers. Includes 56MMF capacitor. Includes 75MMF capacitor.
L10	Sound Trap	0Ω	0Ω	71778		
L11	4th Video IF	.1Ω		71426		
L12	Peaking	2.2Ω		71793		36 Microhenries
L13	Peaking	6Ω				180 Microhenries. Wound on 39KΩ resistor Not used in all receivers.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) CONT.

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L14	Peaking	4.5Ω		71529		120 Microhenries. Wound on 22KΩ resistor.
L15	Peaking	2.2Ω		71793		36 Microhenries.
L16	Peaking	4.5Ω		71529		120 Microhenries
L17	Sound IF	0Ω	0Ω	71424		Includes 10MMF capacitor and 33MMF cap.
L18	Disc. Trans.	0Ω	0Ω	71427		Includes 2-56MMF capacitor and 47MMF cap.
L19	Width Cont.	0Ω		71429		
L20	Hor. Linearity	36Ω		71449		
L21	FM Ant.	0Ω	0Ω	72335		
L22	FM Osc.	0Ω		72336		
L23	AM Ant.	26Ω	1.5Ω	72071		
L24	AM Osc.	4Ω		72333	14-1060	
L25	FM 1st IF	.5Ω	.8Ω	72887		
L26	AM 1st IF	12Ω	12Ω	71625	16-6658	
L27	FM 2nd IF	1.2Ω	.5Ω	72888		
L28	AM 2nd IF	8Ω	8Ω	71631	16-6660	
L29	Ratio Det. Trans.	.1Ω	.1Ω	72889		
L30	Fil. Chk.	0Ω		72574		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA PART No.	NOTES
M1	Bayonet	7.5	.2	White	11765	Type #51
M2	Bayonet	7.5	.2	White	11765	Type #51
M3	Bayonet	7.5	.2	White	11765	Type #51
M4	Bayonet	7.5	.2	White	11765	Type #51

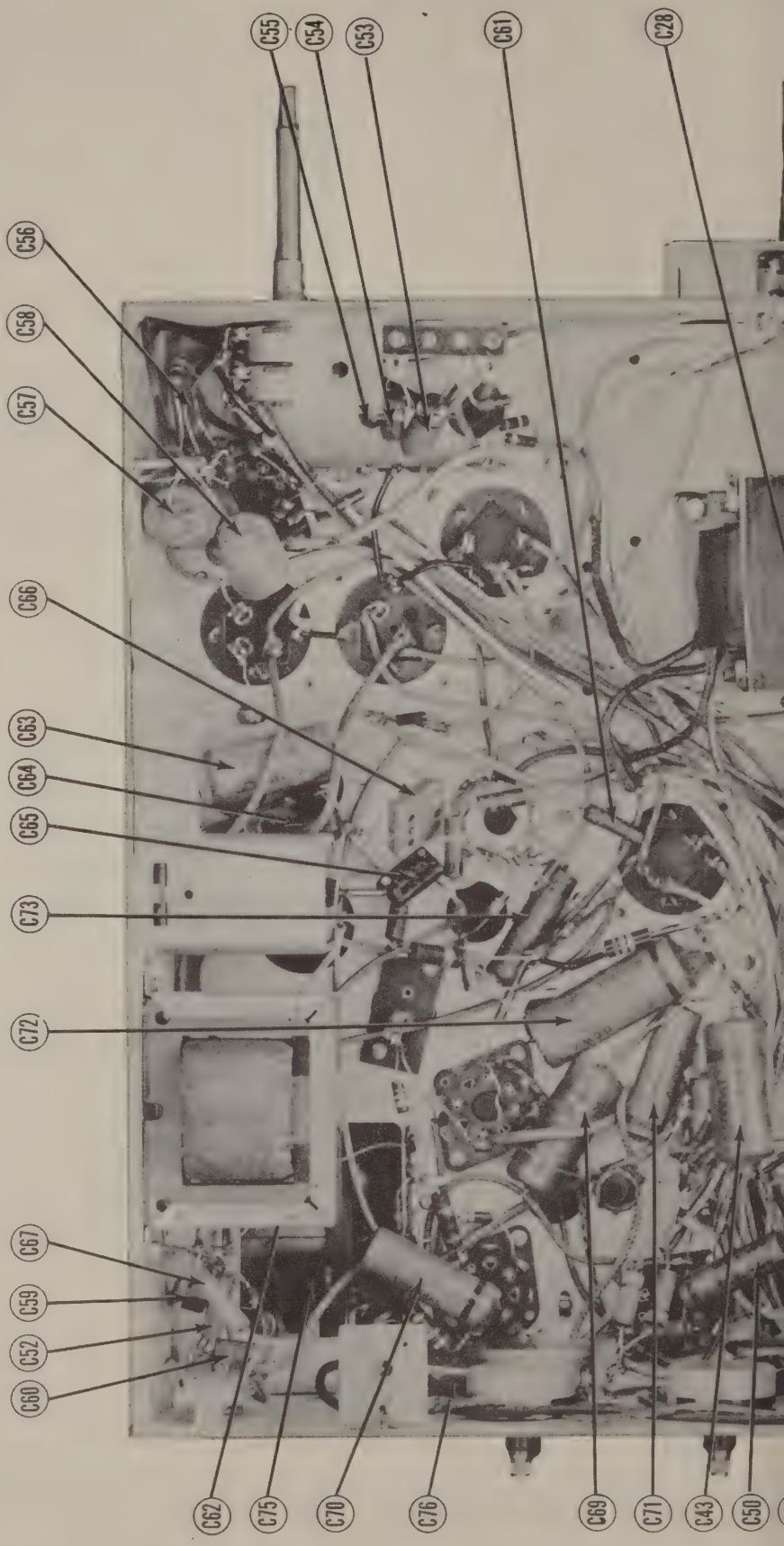
MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M5	Band Switch	72852	Includes TV Power Switch
M6	Tone Switch	71603	
M7	Fuse		Not used in all sets
M8	Tuning Cap	72059	26-568MMF, 13-368MMF W/T
M9	Ion Trap	71792	Electo-Magnet
M10	Tuner	KRK2B-1	
	Safety Glass	73027	
	Dial Scale	73070	For model 730TV1
	Dial Scale	72682	For model 730TV2
	Knob	71821	For radio tuning, band switch, off-volume, and tone switch for walnut or mahongany instruments.
	Knob	72800	For radio tuning, band switch, off-volume and tone switch for toasted mahogany instruments.
	Knob	71533	For fine tuning for walnut or mahogany instruments.
	Knob	71534	For station selector for walnut or mahogany instruments.
	Knob	71535	For brightness and vertical hold for walnut or mahogany instruments.
	Knob	71536	For contrast or horizontal hold for walnut or mahogany instruments.
	Knob	72565	For brightness and vertical hold for toasted mahogany instruments.
	Knob	72566	For contrast and Hor. hold for toasted mahogany instruments.
	Knob	72567	For fine tuning for toasted mahogany instruments.

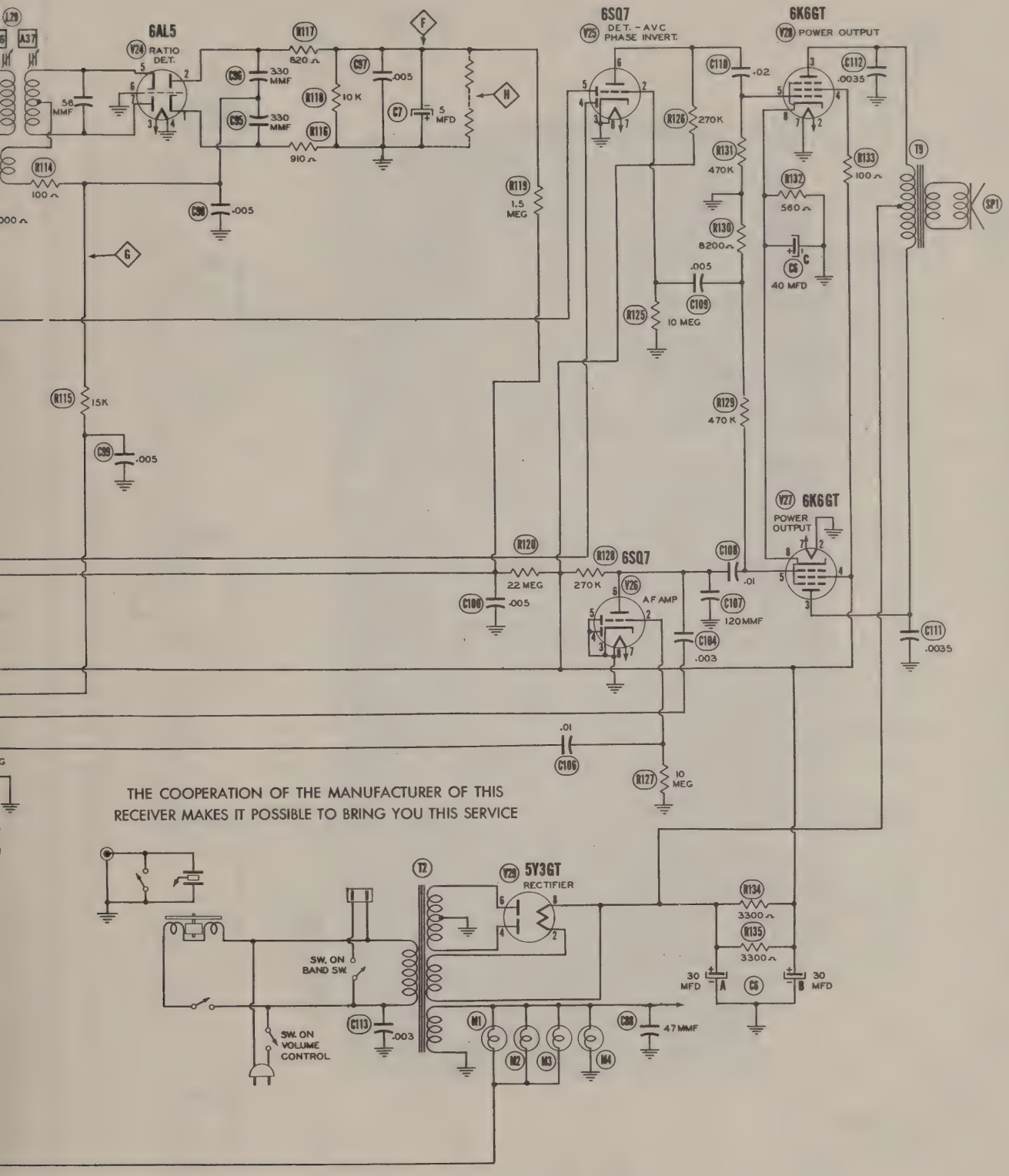
DISASSEMBLY INSTRUCTIONS

1. Remove 3 push-on type knobs from TV controls.
2. Remove 4 push-on type knobs from receiver controls.
3. Remove 9 screws holding rear cover.
4. Remove picture tube base socket and Ion trap.
5. Remove HV cap from picture tube.
6. Remove 2 phillips-head screws from upper corners of picture tube front plate. Remove front plate.
7. Loosen 4 screws holding clamps at large end of picture tube. Remove tube, slide forward.
8. Remove TV power plug from rear of receiver chassis.
9. Remove TV audio plug from rear of receiver chassis.
10. Remove TV antenna plug from rear of receiver chassis.
11. Remove 7 hex head bolts holding TV chassis.
12. Remove TV chassis.
13. Remove speaker plug at speaker.
14. Remove phono audio plug from rear of receiver chassis.
15. Remove receiver antenna plug from rear of receiver chassis.
16. Disconnect phono power plug.
17. Remove panel lamp from inside bottom front center of cabinet.
18. Remove panel lamp from phono section.
19. Remove two hex head bolts from rear of receiver mounting board.
20. Remove two hex nuts holding receiver chassis to mounting board. Remove hooked studs by pushing up and turn.
21. Remove receiver chassis.
22. Remove four hex nuts holding speaker.
23. Remove speaker.

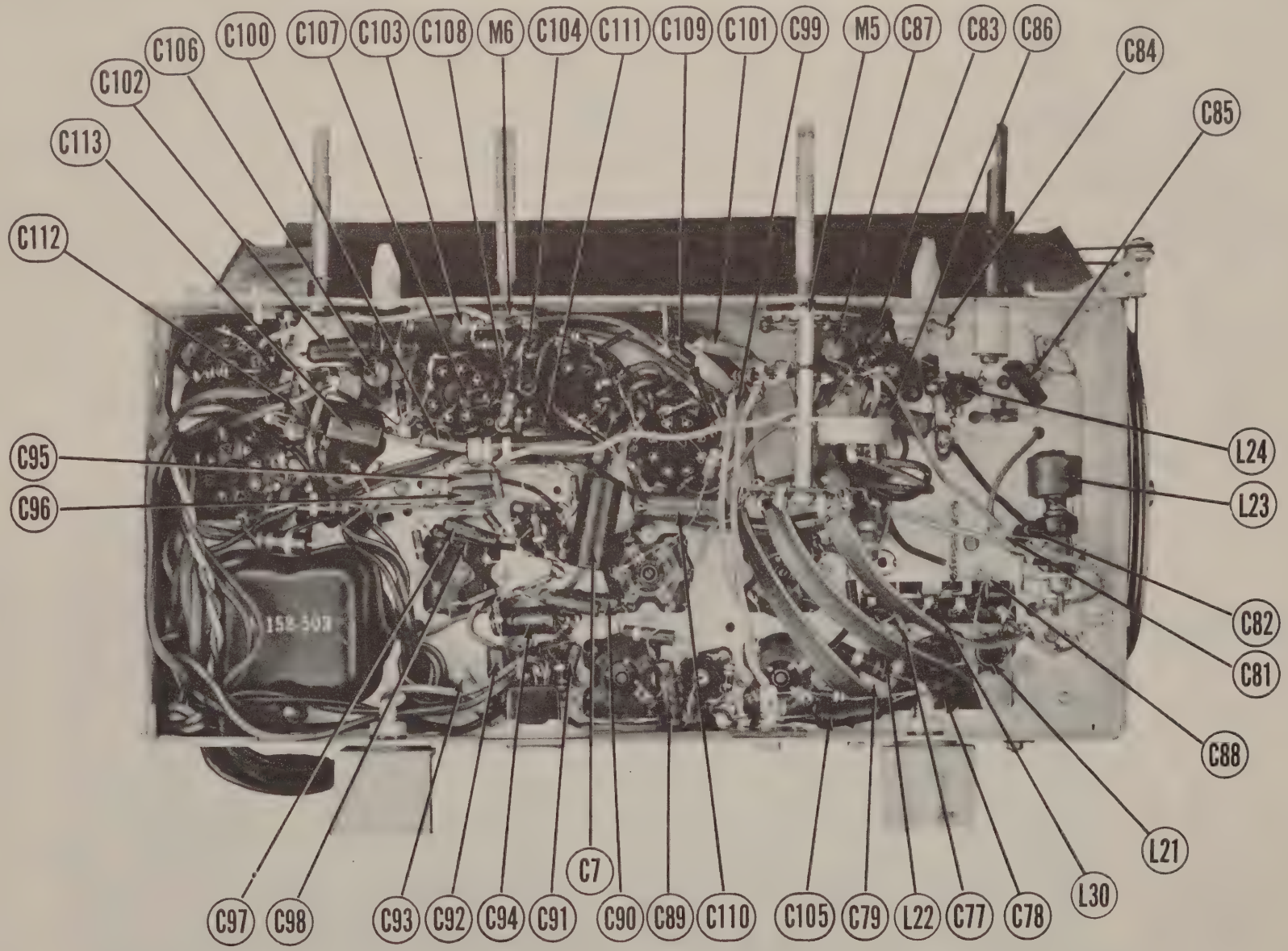
RESISTOR IDENTIFICATION



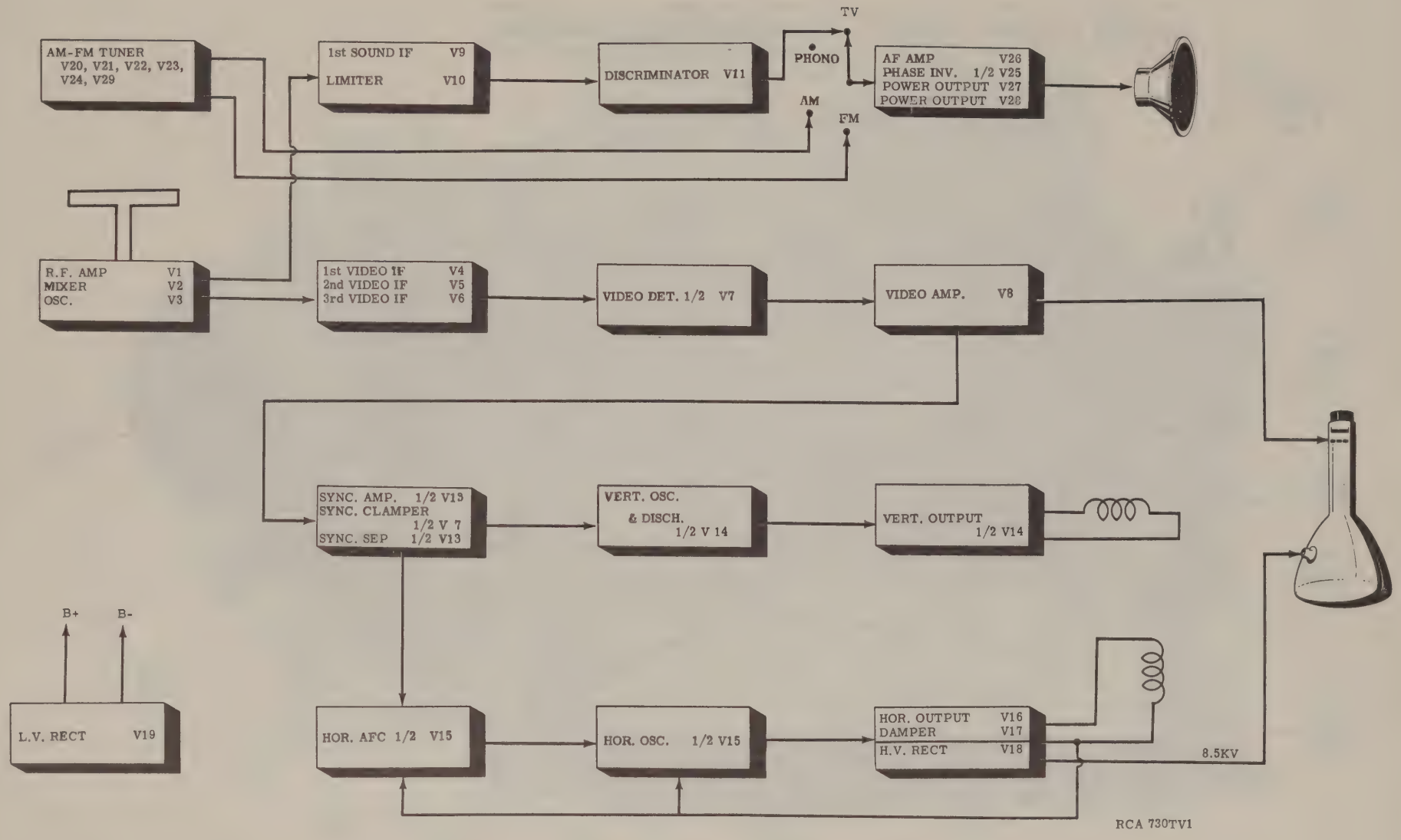
CHASSIS BOTTOM VIEW-C



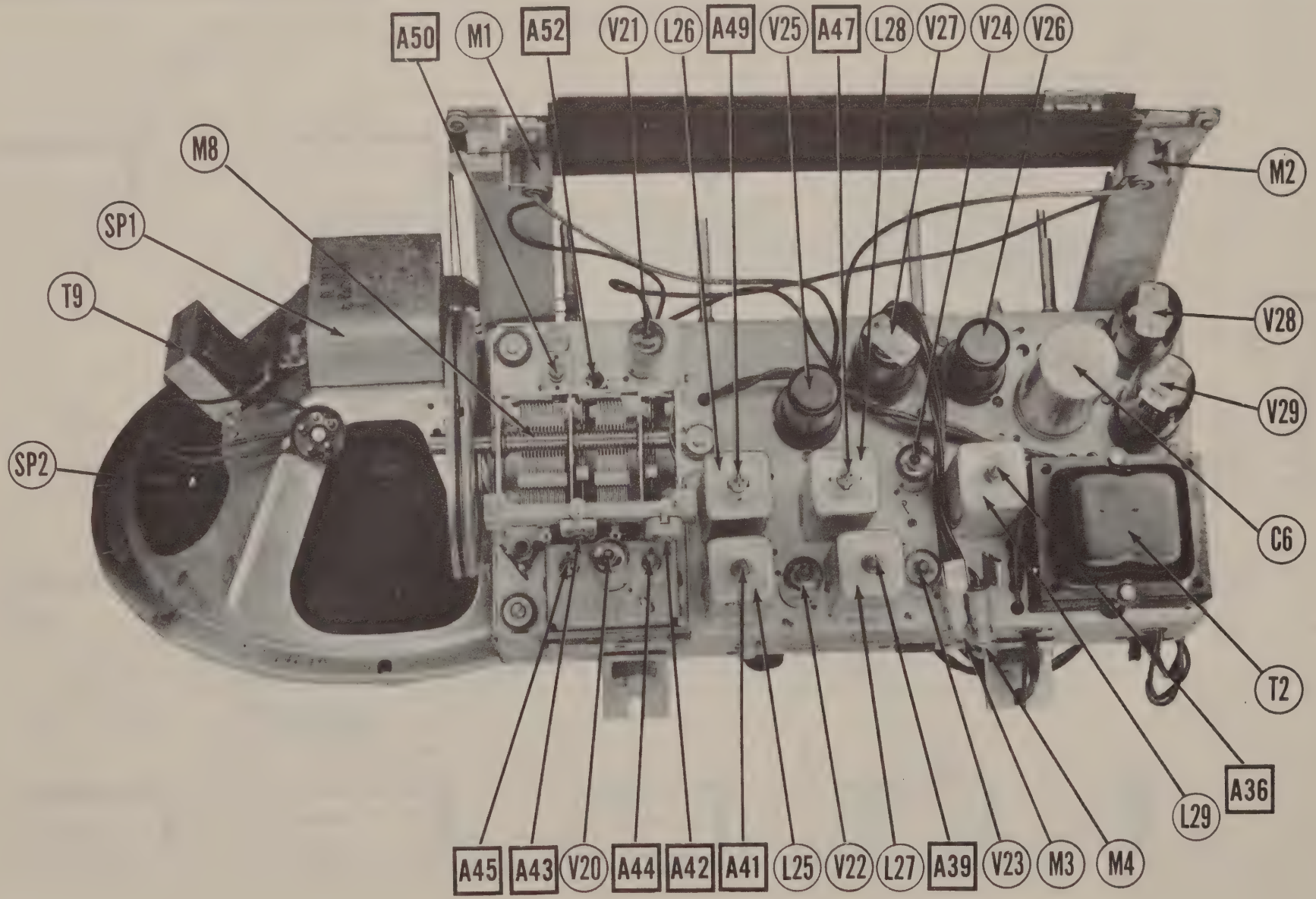
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



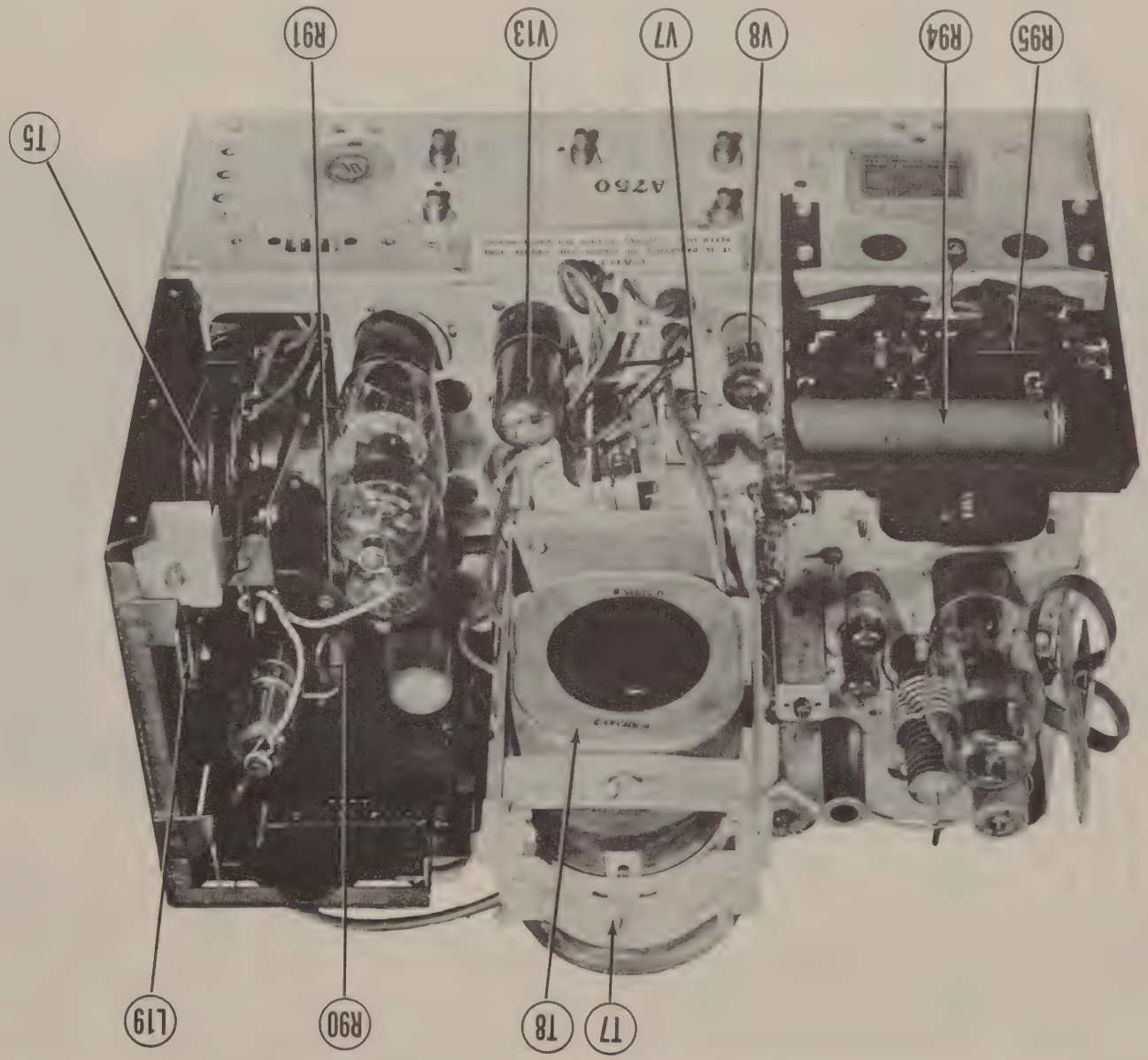
RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION

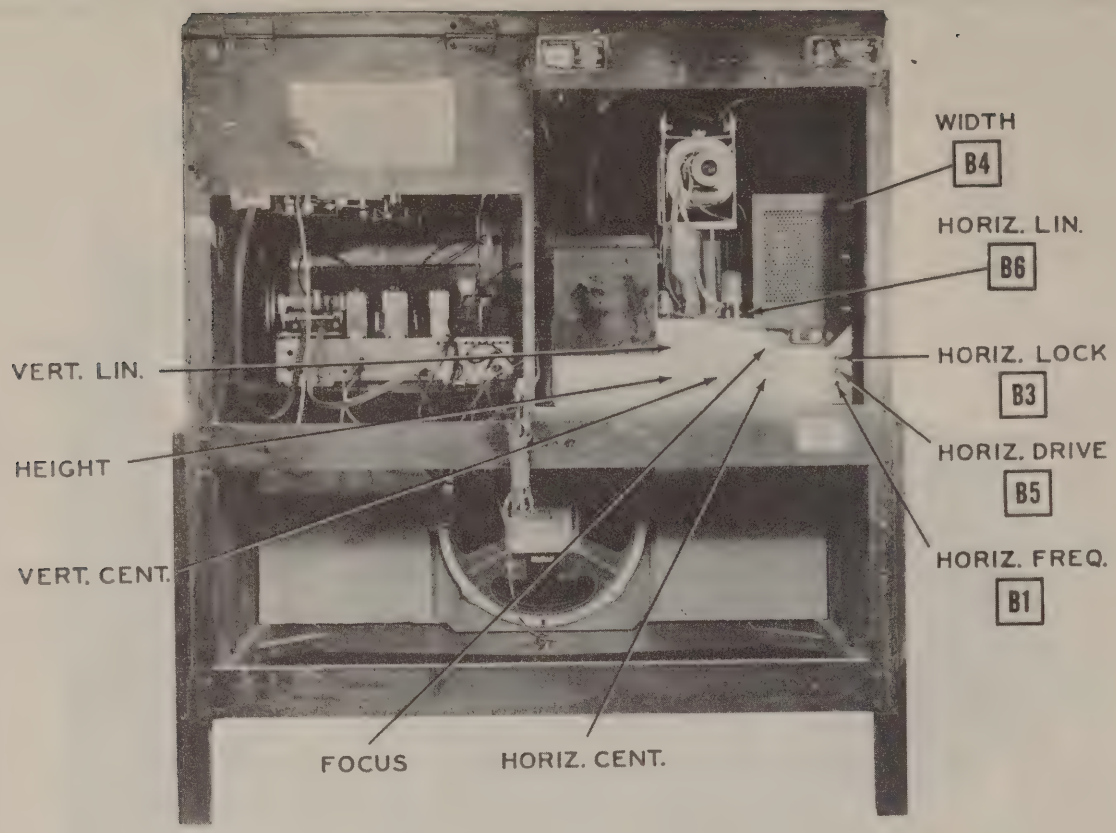


BLOCK DIAGRAM



RADIO CHASSIS-TOP VIEW


R91
V13
V7
V8
R94
R95
T5
A750
L19
R90
T8
T7



CABINET-REAR VIEW

HORIZONTAL OSCILLATOR AND LINEARITY ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT CHECK:

Tune in test pattern and turn horizontal hold control to extreme counter-clockwise position. Picture should remain in synchronization. Turn channel switch to another channel and then back to the original channel. Normally, the picture should be out of synchronization. Turn the control clockwise and the picture should slowly begin to synchronize and finally lock-in. This should occur when the control is approximately 90° from the extreme counter-clockwise position. The picture should remain in synchronization for another 90° in the clockwise direction of the control. At the extreme clockwise position the picture should again drop out of synchronization and 3½ to 4½ bars should be seen sloping downard to the right. If the receiver fails to hold synchronization during this check with the hold control at the extreme counter-clockwise position or fails to hold synchronization for at least 60° in the clockwise direction from the point when it drops into "sync" it will be necessary to align the horizontal oscillator circuit as follows:

(A) HORIZONTAL OSCILLATOR ALIGNMENT:

Turn horizontal hold control to extreme clockwise position. Tune in test pattern and adjust trimmer B1 until picture is out of sync. and shown 3½ to 4½ bars sloping downward to the right. If the trimmer has insufficient range, set it to its mid-position (one turn from tight) and adjust slug B2 until bars appear.

(B) HORIZONTAL LOCKING ALIGNMENT:

Turn the horizontal hold control to full counter-clockwise position. Switch to another channel and back to the original again.

Slowly turn horizontal hold control clockwise and note the least number of diagonal bars present just before picture syncs. If more than 4½ bars are present just before picture sync. adjust "horizontal lock" trimmer B3 slightly clockwise. If less than 3½ bars are present adjust B3 slightly counter-clockwise and switch channel selector to another channel and back again. Recount bars present at the "lock-in" point. Repeat this procedure until 3½ to 4½ bars are present.

Repeat Steps (A) & (B) until conditions exist as outlined under "Horizontal Oscillator Alignment Check".

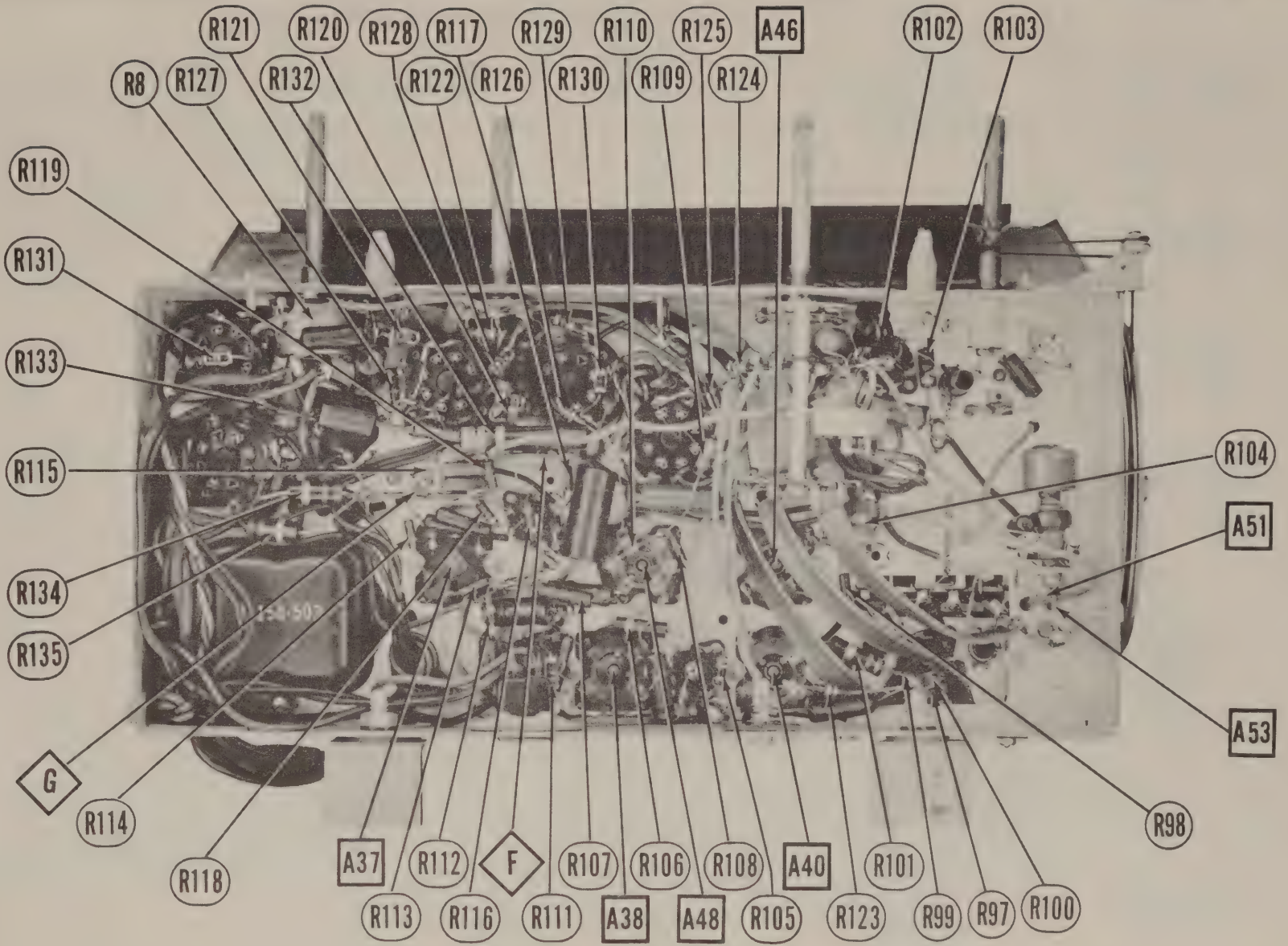
WIDTH, DRIVE & HORIZONTAL LINEARITY ADJUSTMENTS:

Turn width control B4 to maximum clockwise position. Adjust "horizontal drive" trimmer B5 for maximum brightness and linearity. Adjust horizontal linearity B6 for best linearity in the right half of the picture. Readjust width control until picture fills the mask.

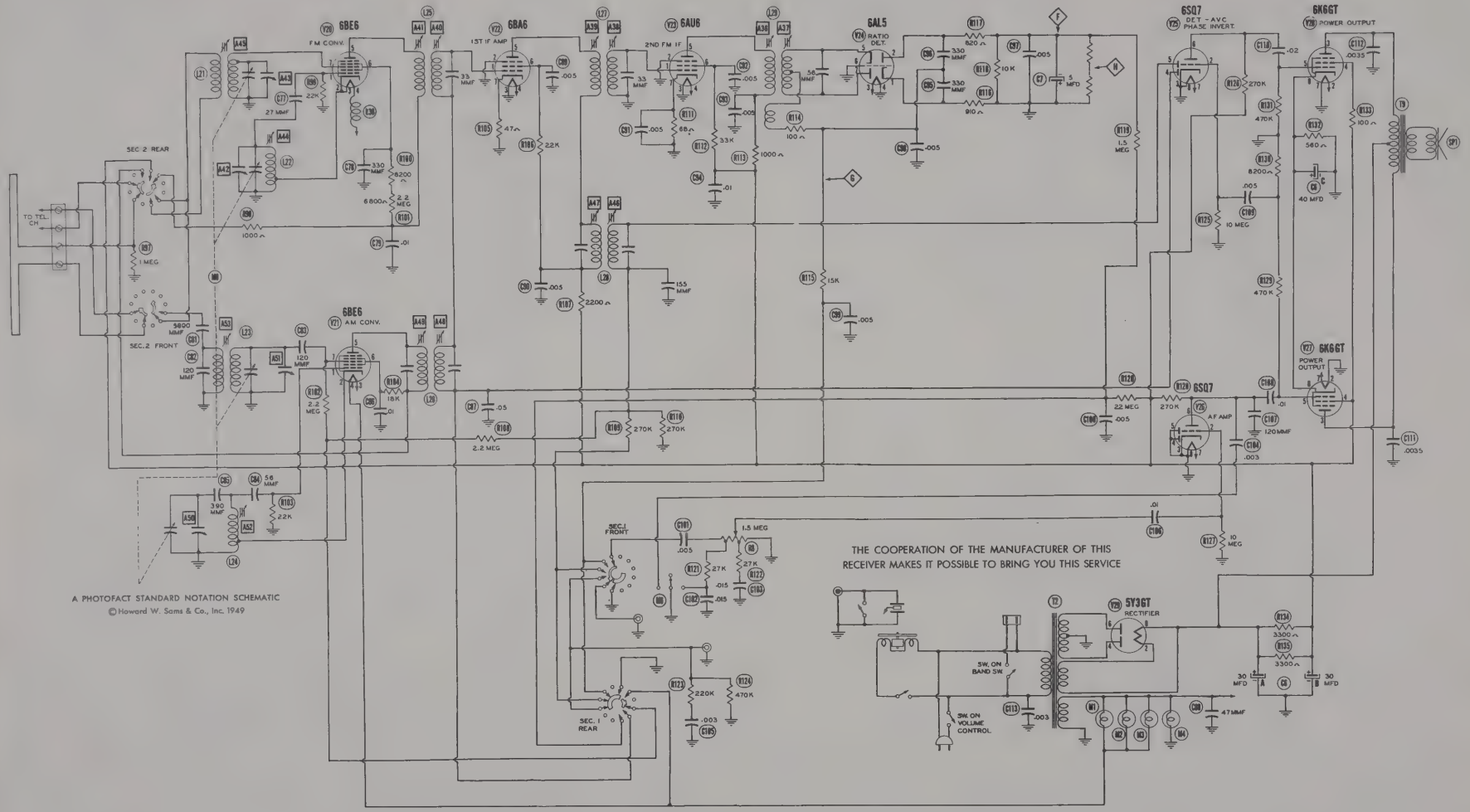
HEIGHT & VERTICAL LINEARITY ADJUSTMENTS:

Adjust the height control until picture fills mask vertically. Adjust the vertical linearity control until the test pattern is symmetrical from top to bottom.

Due to intraction between these two controls it is necessary to repeat the adjustment. Adjust the vertical centering control to align the picture with the mask.



RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



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VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	145VDC	145VDC	6.3VAC	0V	-8.8VDC	-8.9VDC	0V		
V 2	6J6	140VDC	140VDC	6.3VAC	0V	-2.2VDC	-3.9VDC	0V		
V 3	6J6	75VDC	75VDC	6.3VAC	0V	§-4.8 VDC	§-6.4 VDC	.3VDC		
V 4	6AG5	-8.5VDC	0V	6.3VAC	0V	145VDC	145VDC	0V		
V 5	6AG5	-8.8VDC	0V	6.3VAC	0V	145VDC	145VDC	0V		
V 6	6AG5	0V	1.3VDC	6.3VAC	0V	95VDC	140VDC	1.3VDC		
V 7	6AL5	0V	-.2VDC	0V	6.3VAC	0V	0V	-.1VDC		
V 8	12AU7	127VDC	-.5VDC	0V	6.3VAC	6.3VAC	♦150VDC	♦0V	■.7VDC	0Ω
V 9	6BA6	0V	0V	0V	6.3VAC	125VDC	125VDC	1.5VDC		
V 10	6AU6	-.5VDC	0V	0V	6.3VAC	140VDC	85VDC	0V		
V 11	6AL5	0V	-.1VDC	6.3VAC	1.8VDC	0V	0V	-.1VDC		
V 12	6AT6	0V	0V	0V	6.3VAC	0V	-9VDC	0V		
V 13	6SN7GT	-.6VDC	150VDC	0V	-.2VDC	232VDC	9.4VDC	6.3VAC	0V	
V 14	6SN7GT	♦-6VDC	♦72VDC ♦137VDC	♦0V	♦-.1VDC	♦290VDC	♦25VDC ♦85VDC	6.3VAC	0V	
V 15	6SN7GT	♦0V	♦95VDC	♦9.2VDC	♦-31VDC	♦137VDC	♦0V	6.3VAC	0V	
V 16	6BG6	0V	6.3VAC	-65VDC	0V	■0V	0V	0V	175VDC	*
V 17	5V4G	0V	320VDC	320VDC	260VDC	0V	260VDC	0V	320VDC	
V 18	1B3GT	* DO NOT MEASURE.								
V 19	5U4G	0V	275VDC	0V	380VAC	0V	380VAC	0V	275VDC	
‡V20	6BE6	§-.2 VDC	0V	0V	6.3VAC	260VDC	130VDC	0V		
V 21	6BE6	§-8.6 VDC	0V	0V	6.3VAC	250VDC	95VDC	0V		
V 22	6BA6	-.3VDC	0V	0V	6.3VAC	210VDC	120VDC	.7VDC		
‡V23	6AU6	0V	0V	0V	6.3VAC	240VDC	150VDC	.8VDC		
‡V24	6AL5	2.5VDC	-.1VDC	6.3VAC	0V	-.1VDC	0V	2.9VDC		
V 25	6SQ7	0V	-.2VDC	0V	-.3VDC	-.4VDC	105VDC	6.3VAC	0V	
V 26	6SQ7	0V	-.3VDC	0V	0V	0V	105VDC	6.3VAC	0V	
V 27	6K6GT	0V	0V	310VDC	240VDC	0V	0V	6.3VAC	20VDC	
V 28	6K6GT	0V	6.3VAC	310VDC	240VDC	0V	0V	0V	20VDC	
V 29	5Y3GT	0V	310VDC	240VDC	320VAC	0V	320VAC	0V	310VDC	
V 30	10BP4	140VDC	75VDC	PIN 10 290VDC	PIN 11 220VDC	PIN 12 140VDC				

♦ Measured from Pin 3 of V14.
* Do Not Measure.

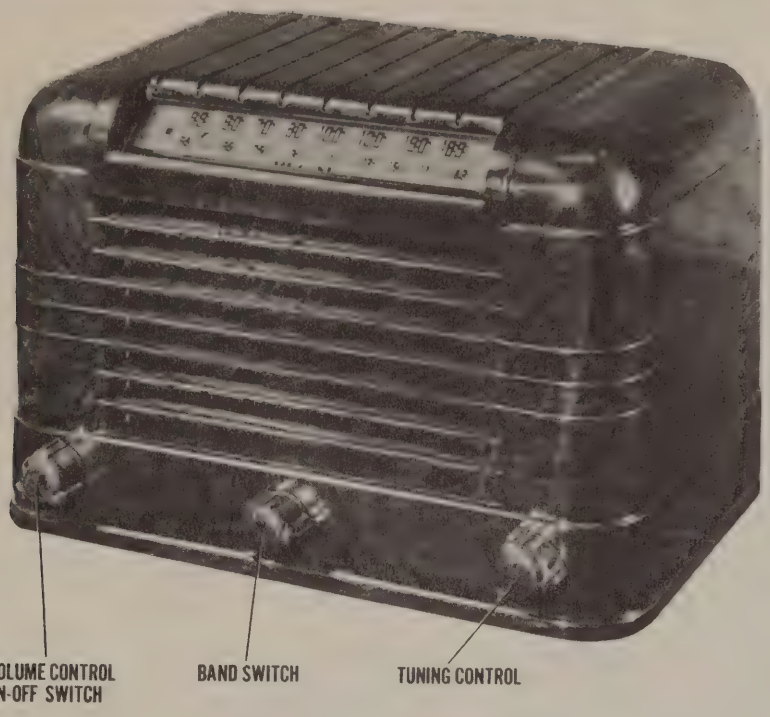
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†6.5KΩ	†6.5KΩ	.1Ω	0Ω	100KΩ	100KΩ	0Ω		
V 2	6J6	†2KΩ	†2KΩ	.1Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V 3	6J6	†5.5KΩ	†5.5KΩ	.1Ω	0Ω	100KΩ	100KΩ	47Ω		
V 4	6AG5	20KΩ	39Ω	.1Ω	0Ω	†2KΩ	†2KΩ	39Ω		
V 5	6AG5	12KΩ	39Ω	.1Ω	0Ω	†2KΩ	†2KΩ	39Ω		
V 6	6AG5	15KΩ	150Ω	.1Ω	0Ω	†8.5KΩ	†2KΩ	150Ω		
V 7	6AL5	.2Ω	4 Meg.	0Ω	.1Ω	0Ω	0Ω	2KΩ		
V 8	12AU7	†4.5KΩ	1 Meg.	0Ω	.1Ω	.1Ω	†5.5KΩ	♦1 Meg.	♦ 47Ω	0Ω
V 9	6BA6	0Ω	0Ω	0Ω	.1Ω	†2.2KΩ	†2.2KΩ	82Ω		
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†2KΩ	†23KΩ	0Ω		
V 11	6AL5	200KΩ	100KΩ	.1Ω	2.1Ω	0Ω	0Ω	100KΩ		
V 12	6AT6	Inf.	0Ω	0Ω	.1Ω	Inf.	100KΩ	Inf.		
V 13	6SN7GT	♦ 1 Meg.	†15KΩ	0Ω	4 Meg.	†300Ω	6.8KΩ	.1Ω	0Ω	
V 14	6SN7GT	♦ 1 Meg.	♦2.3 Meg ♦1.2 Meg	♦ 0Ω	2.2 Meg.	†2KΩ	♦5KΩ ♦500Ω	.1Ω	0Ω	
V 15	6SN7GT	♦850KΩ	■320KΩ	♦280KΩ	♦200KΩ	■140KΩ	♦0Ω	.1Ω	0Ω	
V 16	6BG6	Inf.	.1Ω	♦82Ω	Inf.	♦1 Meg.	Inf.	0Ω	†5.5KΩ	TOP CAP ■200Ω
V 17	5V4G	Inf.	200KΩ	200KΩ	‡70Ω	Inf.	†70Ω	Inf.	200KΩ	
V 18	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ■450Ω
V 19	5U4G	Inf.	4.5KΩ	Inf.	670Ω	Inf.	660Ω	Inf.	4.5KΩ	
V 20	‡6BE6	22KΩ	0Ω	0Ω	.1Ω	#3KΩ	#18KΩ	0Ω		
V 21	6BE6	22KΩ	0Ω	0Ω	.1Ω	#2KΩ	#20KΩ	4.5 Meg		
V 22	6BA6	2.5 Meg.	0Ω	0Ω	.1Ω	#4KΩ	#26KΩ	68Ω		
V 23	‡6AU6	1Ω	0Ω	0Ω	.1Ω	#3KΩ	#33KΩ	68Ω		
V 24	‡6AL5	920Ω	11KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V 25	6SQ7	0Ω	10 Meg.	0Ω	2.5 Meg	270KΩ	#270KΩ	.1Ω	0Ω	
V 26	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	#270KΩ	.1Ω	0Ω	
V 27	6K6GT	0Ω	0Ω	#330Ω	#2KΩ	480KΩ	8.2KΩ	.1Ω	560Ω	
V 28	6K6GT	0Ω	.1Ω	#300Ω	#2KΩ	470KΩ	Inf.	0Ω	560Ω	
V 29	5Y3GT	0Ω	800KΩ	800KΩ	250Ω	Inf.	260Ω	Inf.	800KΩ	
V 30	10BP4	†1000Ω	†5KΩ	PIN 10 ■56KΩ	PIN 11 †280Ω	PIN 12 †1000Ω				

† Measured From Pin 8 Of V19.
♦ Measured From Pin 3 Of V14.
■ Measured From Pin 8 Of V17.
‡ Measured From Pin 8 Of V29.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

MODELS 730TV1, 730TV2,
(Ch. KC527-1)



REGAL MODEL 7152

TRADE NAME Regal, Model 7152.
MANUFACTURER Regal Electronics Corp., 605 W. 130th St., New York, N.Y.
TYPE SET AC-DC Operated 2 Band AM Superheterodyne Receiver with Loop Antenna.
TUBES (FIVE) Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7 DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 105-125 Volts AC-DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST 540-1650KC — **SHORT WAVE** 5.8 - 18.3MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning gang fully closed and set left hand edge of the pointer 1 11/16" from the left hand edge of the dial backplate.

Use isolation transformer if available. If not connect a .1 MFD. cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to rear stator of tuning gang. Low side to chassis.	455KC	BC	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	.05MFD	"	1650KC	BC	"	"	A5	Adjust for maximum output
3.		Loop	1400KC	BC	Tune for max. signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	600KC	BC	600KC (2 3/16" from left edge of dial backplate.)	"	A7	Adjust for maximum output
5.	400Ω Carbon Resistor	High side to external antenna lead. Low side to chassis.	18.3MC	SW	Tuning gang fully open.	"	A8	Adjust for maximum output
6.	400Ω Carbon Resistor	"	16MC	SW	Tune for max. signal	"	A9	Adjust for maximum output

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DATE 9/49 4918-8 SET #70 FOLDER #8

PARTS LIST AND DESCRIPTIONS

REGAL
MODEL 7152

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amp.	12SK7GT	12SK7GT	8N	
V3	DET-AVC-AF	12SQ7	12SQ7	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: REGAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	60-101	PRSA150/50	EDL5515		TA-505	Filter Red
B	50	150		-50				Filter Red
C2	.05	200	50-104	P288-05	GT2S5		TM-15	Ext. Ant. Coupling Note 1
C3	.05	400	50-104	P488-05	GT4S5		TM-15	AVC Filter
C4	.005	400	50-101	P688-005	GT6D5	GP2M-005	TM-25	Tuning Cap Isolation
C5	4			1469-000005	5R5V5	NPOK-5	MS-55	Fixed Trimmer Note 2
C6	.05	400	50-104	P488-05	GT4S5		TM-15	RF Bypass
C7	.05	600	50-104	P688-05	GT6S5		TM-15	AVC Filter
C8	220	500	55-103	1468-0002	5W5T2	GP2K-200	1FM-32	Diode Filter Note 3
C9	220	500	55-103	1468-0002	5W5T2	GP2K-200	1FM-32	Diode Filter Note 3
C10	.005	400	50-101	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C11	220	500	55-103	1468-0002	5W5T2	GP2K-200	1FM-32	AF Plate Bypass
C12	.01	400	50-102	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C13	.01	400	50-102	P488-01	GT4S1	GP2-335-01	TM-11	Output Plate Bypass
C14	.05	400	50-103	P488-05	GT4S5		TM-15	Line Filter
C15	.05	400	50-104	P488-05	GT4S5		TM-15	Osc. Anode Bypass Note 2

Note 1. Some Models Use .002 MFD In This Application.
Note 2. Not Used In All Models.
Note 3. Some Models Use 100 MMF In This Application

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	20-101	Q13-133	AM-60-Z	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A per instructions

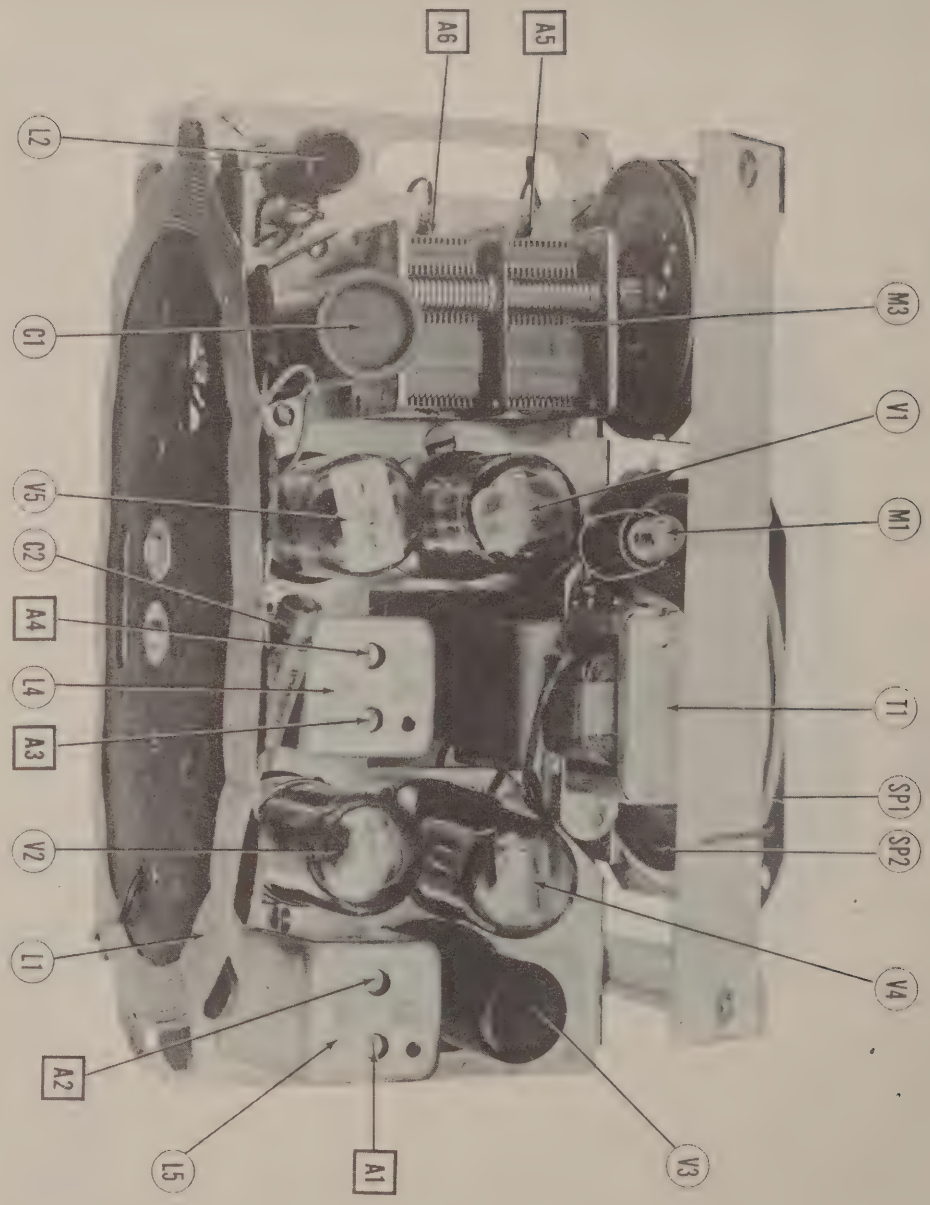
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	65-154	BTS-22K	Osc. Grid
R3	47Ω	½	65-165	BW-½-47	Parasitic Suppressor
R4	68Ω	½		BW-½-68	Parasitic Suppressor
R5	220KΩ	½	65-108	BTS-220K	AVC Net
R6	1000Ω	½		BTS-1000	Conv. Decoupling
R7	2.2 Meg.	½	65-110	BTS-2.2 Meg	AVC Network
R8	47KΩ	½	65-139	BTS-47K	Diode Filter
R9	10 Meg.	½	65-129	BTS-10 Meg.	AF Grid
R10	330KΩ	½		BTS-330K	AF Plate
R11	470KΩ	½	65-109	BTS-470K	Output Grid
R12	150Ω	½	65-163	BW-½-150	Output Cathode
R13	1000Ω	2	65-164	BW-2-1000	Filter
R14	22Ω	½	65-160		Rectifier Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: REGAL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2300Ω	3.1Ω	175Ω	.6Ω	Part Of 110-107	A-3876	RO-2	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA REGAL PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V.C. IMP.		ST-113†		
SP1	PM	3.1Ω	110-107	MOD.P4-X	4A07†	† Remount Output Transformer
	CONE DIA.	V.C. DIA.				
SP2	3 7/8"	9/16"				

R F COILS

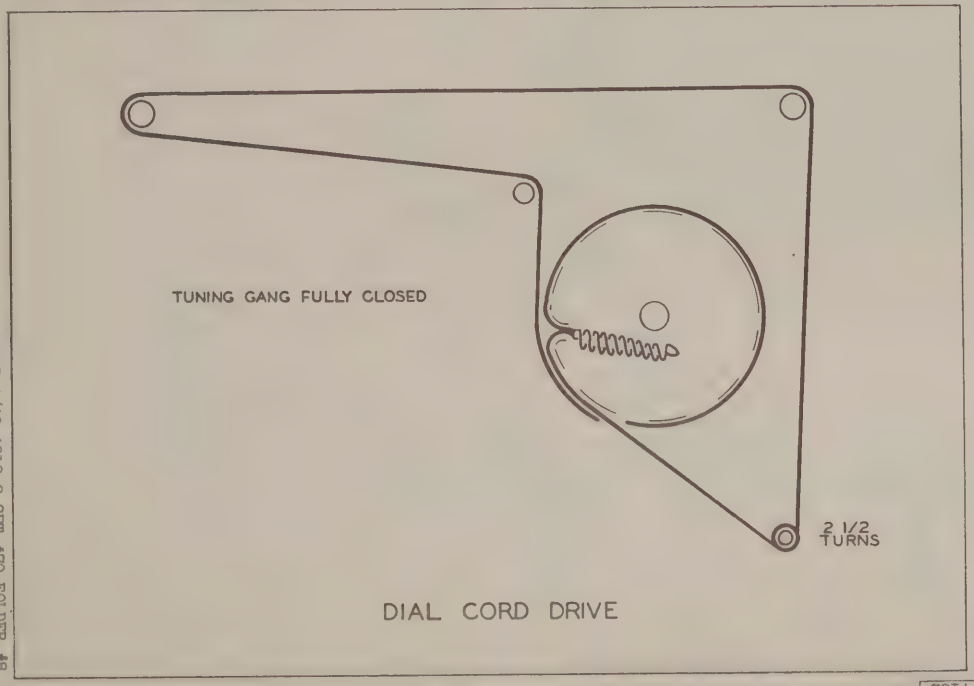
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA REGAL PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	.1Ω	1.2Ω	30-107A	
L2	SW Ant.Coil	.5Ω	0Ω	30-111	14-1044
L3A	BC Osc.Coil	6Ω		30-112	
B	SW Osc.Coil	.5Ω			
L4	Input IF	15Ω	15Ω	30-104C	16-6658
L5	Output IF	15Ω	15Ω	30-105C	16-6658

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA REGAL PART No.		NOTES
M1	Bayonet	6-8	.15	Brown			Type #47

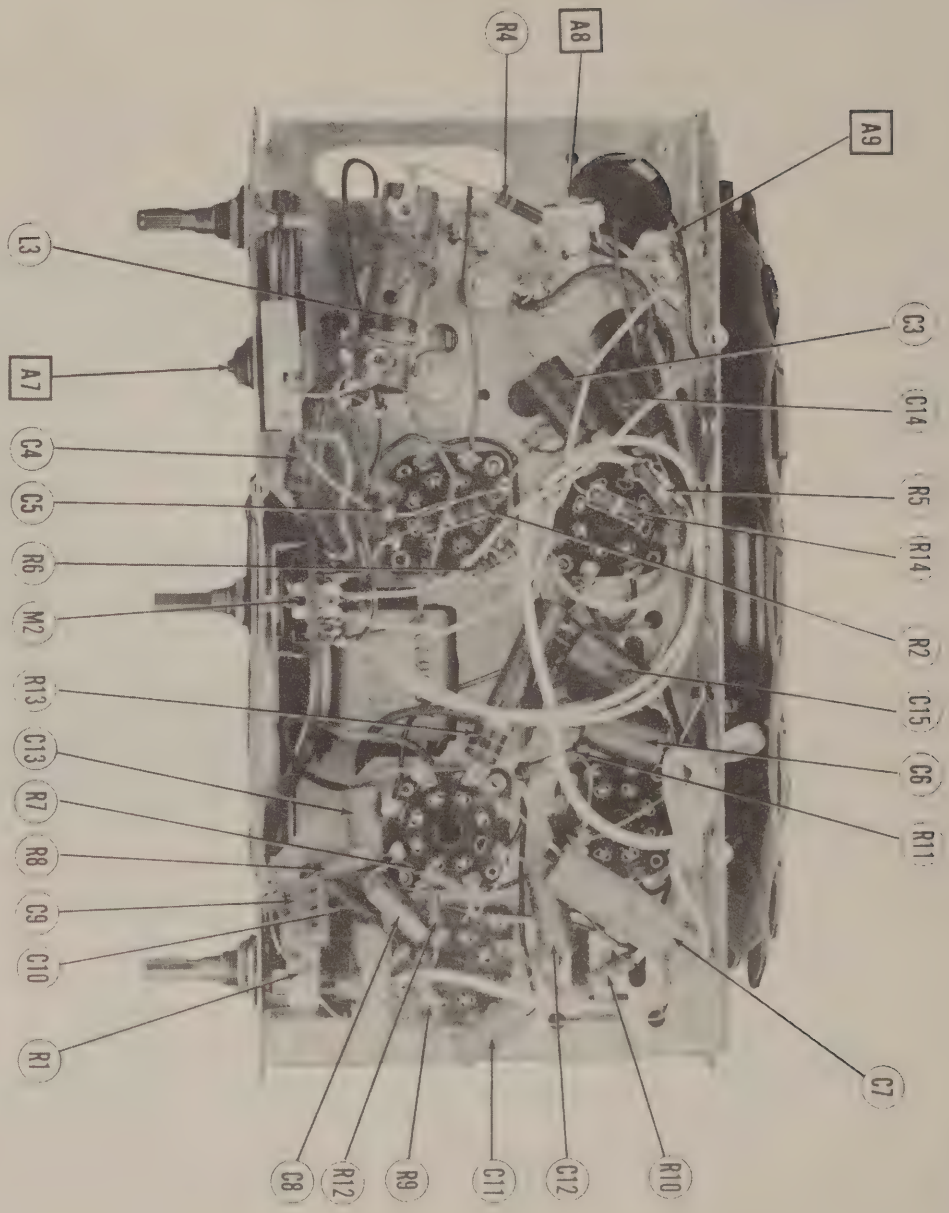
MISCELLANEOUS

ITEM No.	PART NAME	REGAL PART No.	NOTES
M2	Switch	35-109	Band
M3	2 Gang Var. Cap.	40-104B	(32-462MMF) Each Section)

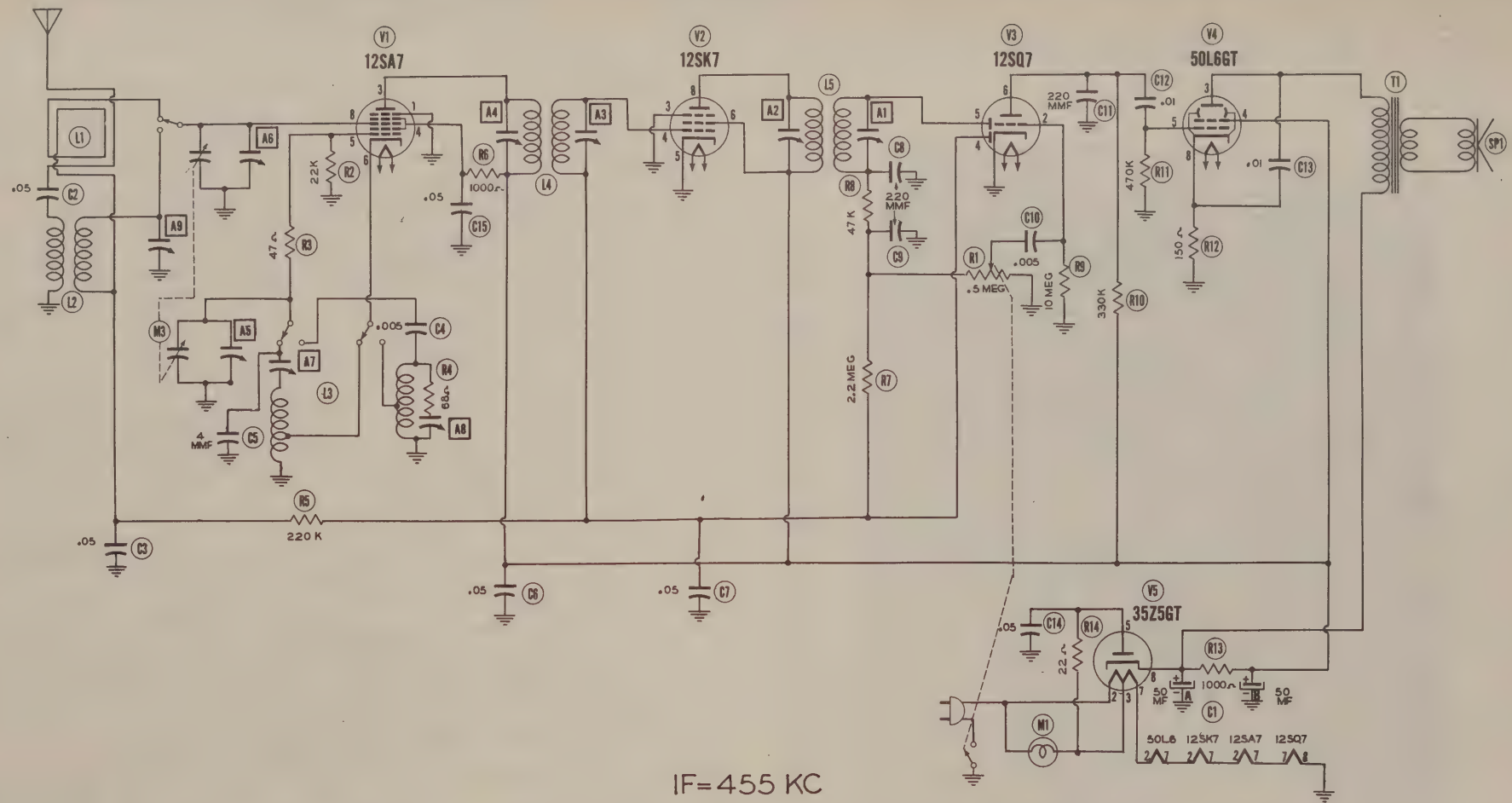


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



REGAL MODEL 7152



IF=455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V	25VAC	90VDC	82VDC	$\frac{5-16}{VDC}$	0V	12VAC	-.2VDC
V 2	12SK7GT	0V	38VAC	0V	-.4VDC	0V	90VDC	25VAC	90VDC
V 3	12SQ7	0V	-.7VDC	0V	-.4VDC	-.3VDC	50VDC	12VAC	0V
V 4	50L6GT	-.3VDC	85VAC	112VDC	90VDC	0V	-.4VDC	38VAC	5.5VDC
V 5	35Z5GT	90VDC	117VAC	112VAC	-.2VDC	110VAC	-.4VDC	85VAC	118VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0Ω	24Ω	†1000Ω	†2KΩ	25KΩ	.5Ω	12Ω	3 Meg.
V 2	12SK7GT	0Ω	36Ω	0Ω	3 Meg.	0Ω	†1000Ω	24Ω	†1000Ω
V 3	12SQ7	0Ω	10 Meg.	0Ω	3 Meg.	54KΩ	†330KΩ	12Ω	0Ω
V 4	50L6GT	500KΩ	87Ω	†180Ω	†1000Ω	500KΩ	3 Meg.	36Ω	150Ω
V 5	35Z5GT	†1000Ω	120Ω	115Ω	†3 Meg.	130Ω	†3 Meg.	87Ω	60KΩ

† Measured From Pin 8 Of V5.

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4918-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

SENTINEL
MODELS 401, 402, 406 SERIES

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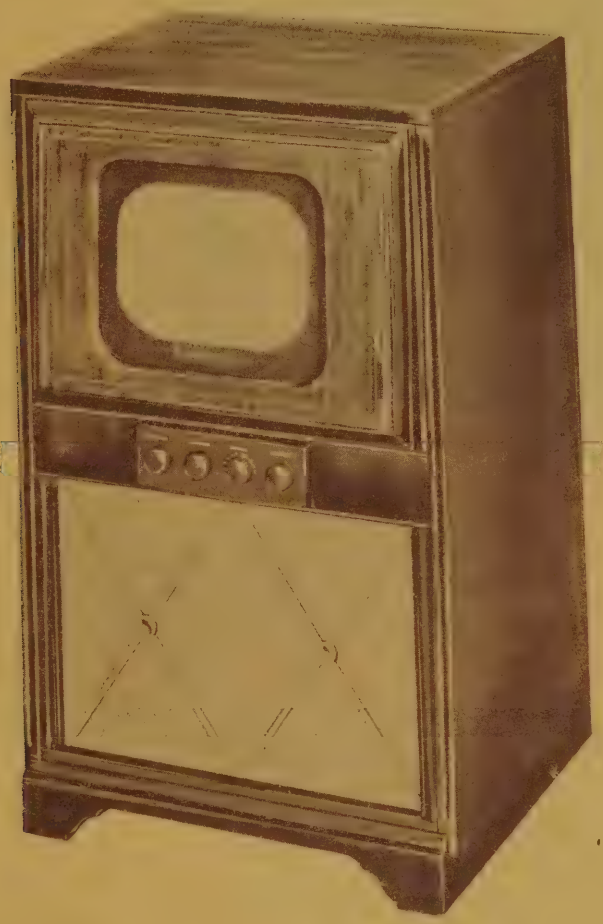

MODEL 402CV

SENTINEL
MODELS 401, 402, 406 SERIES

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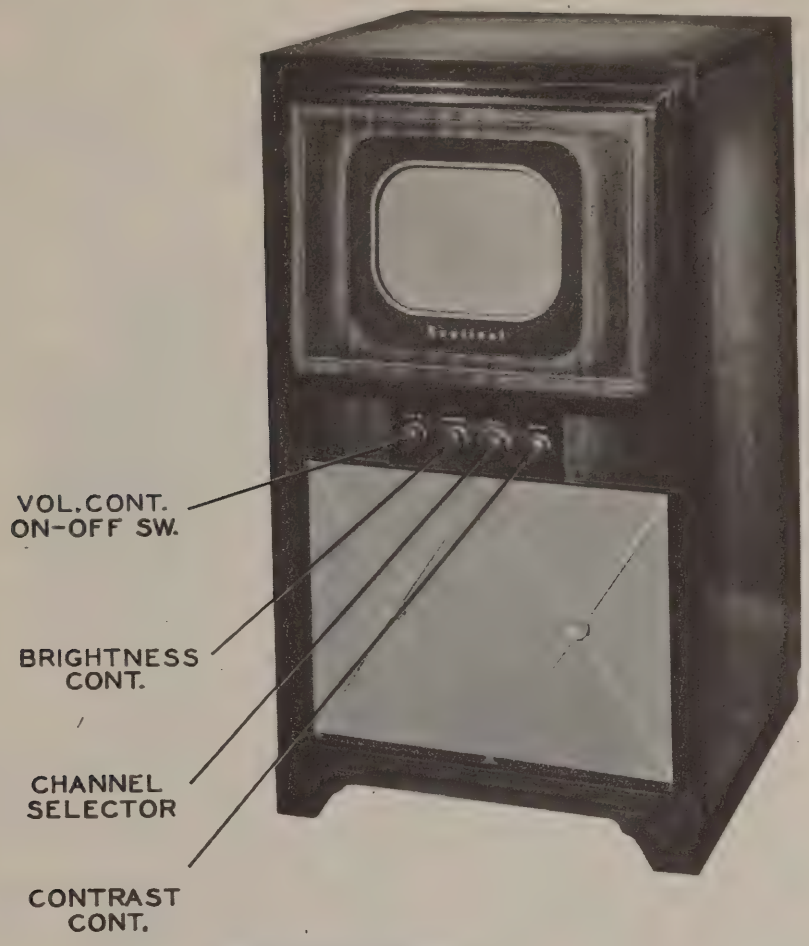

SENTINEL MODELS 401, 402, 406 SERIES

SENTINEL MODEL 402CV

TRADE NAME	Sentinel, Models 401, 402, 406 Series
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster St., Evanston, Illinois
TYPE SET	Television Receiver
TUBES	Twenty-Three
POWER SUPPLY	110-120 Volts-60 Cycles AC RATING: 1.98 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 through 13	

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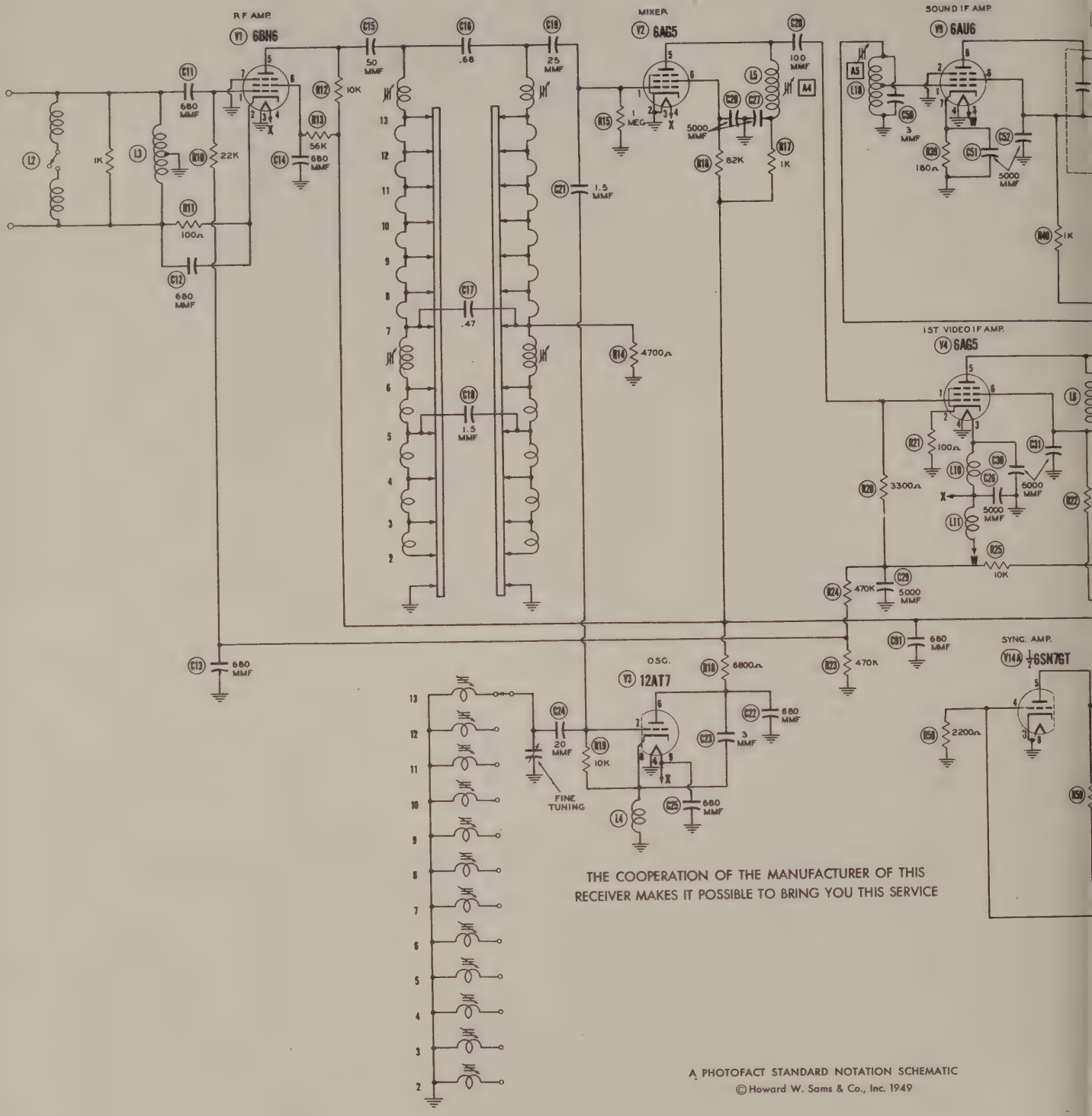

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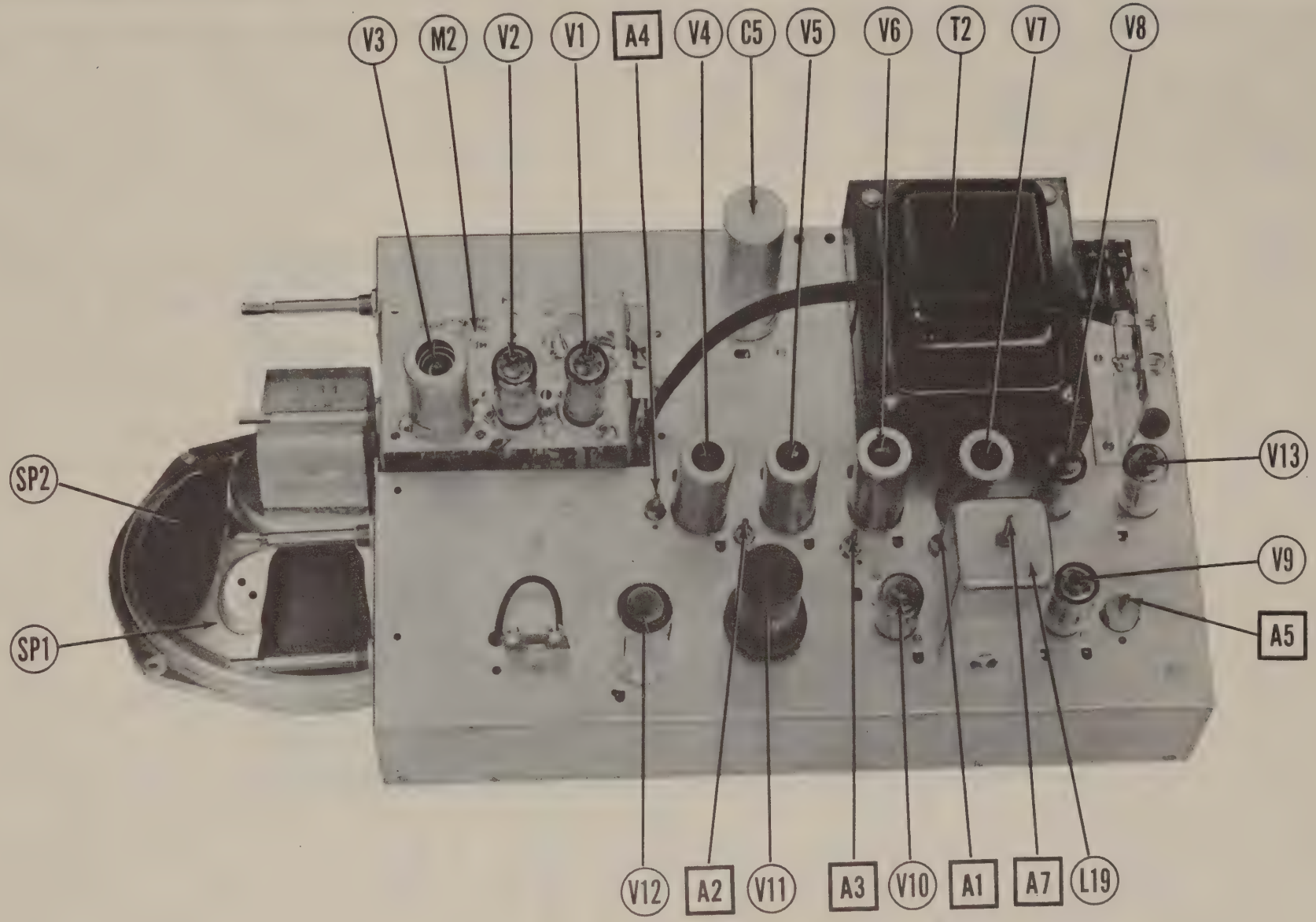
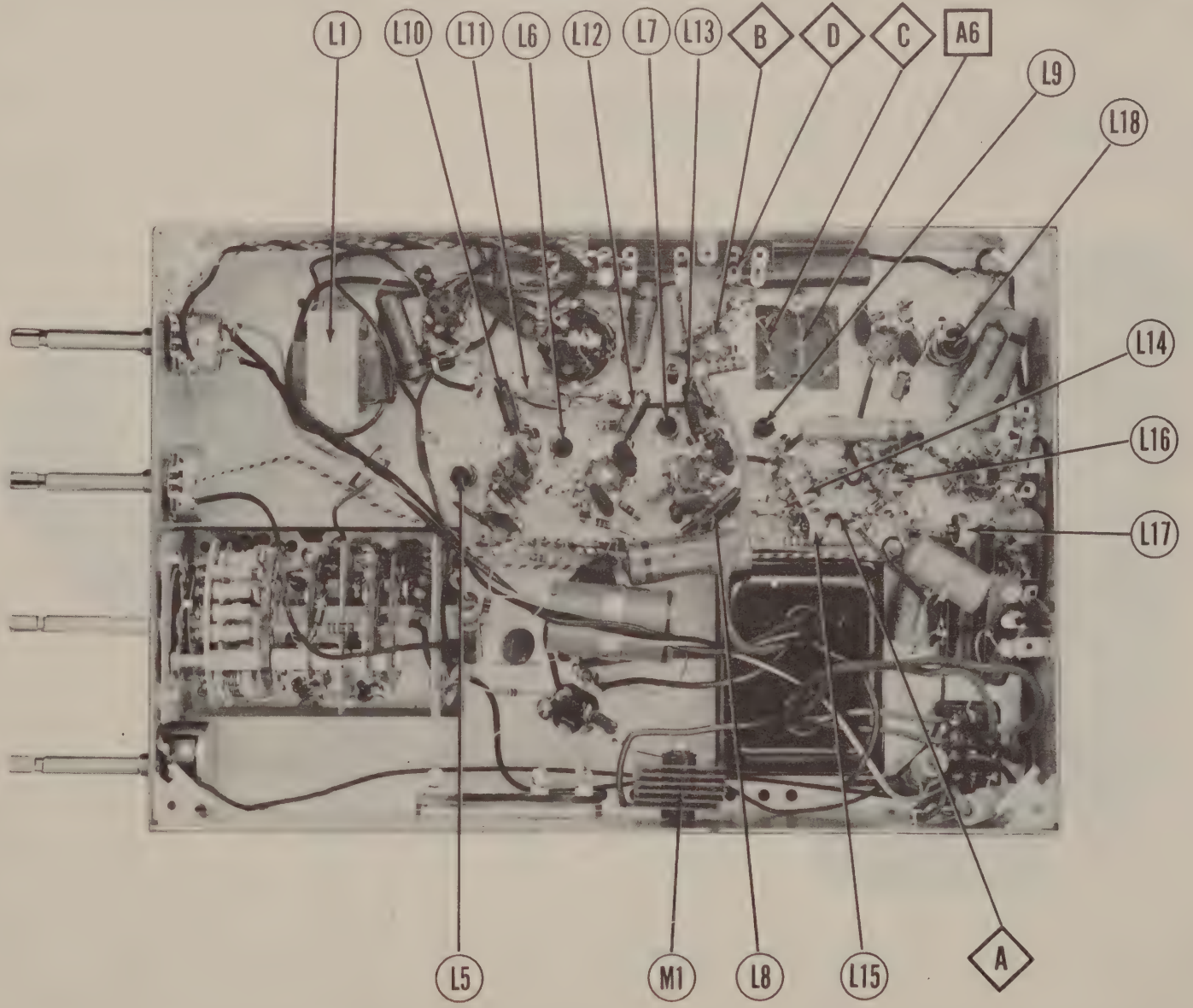


RF-IF CHASSIS-TOP VIEW



RF-IF CHASSIS-BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The interconnecting cable between the two chassis must be connected for complete alignment.
If receiver is to be aligned with picture tube removed, remove horizontal oscillator tube (V16) to remove shock hazard.

VIDEO IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Remove local oscillator tube (V3) to prevent erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.		High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	25.75MC (Unmod.)	Any	DC Probe to Point (A) Common to chassis.	A1,A2	Adjust for maximum deflection.
2.		"	23.4MC	"	"	A3,A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.		High side to ungrounded tube shield floating over mixer tube 6AC5 (V2). Low side to chassis.	24MC (10MC Sweep)	25.75MC 21.25MC	Any	Vert. Amp. to Point (A) Low side to chassis.		Check response as per Fig 1. If necessary slightly retouch A1, A2, A3, A4 to correctly position markers.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 5 (Plate)of 6AU6 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B) Common to chassis.	A5,A6	Adjust for maximum deflection.
5.	.01MFD	"	"	"	DC Probe to Point (C) Common to Point (D)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

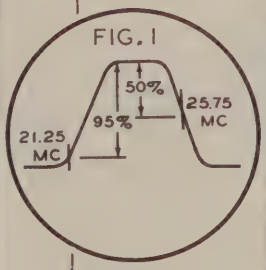
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

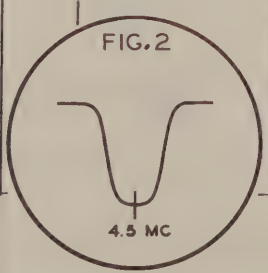
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 5 (plate) of 6AU6 (V8). Low side to chassis.	4.5MC (1MC Sweep)	4.5MC	Any	Vert. Amp. to Point (B) Low side to chassis.	A5,A6	Disconnect stabilizer cap. C7. Adjust for maximum amplitude and symmetry as per Fig 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to chassis.	A7	Reconnect stabilizer cap. C7. Adjust A7 so 10.7MC marker occurs at center of diagonal line. Slightly retouch A6 for maximum amplitude and straightness of diagonal line.

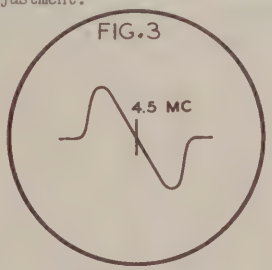
OSCILLATOR ALIGNMENT

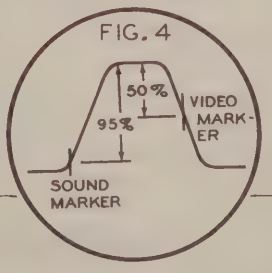
The RF Amplifier and mixer adjustments are pre-set at the factory and are very stable, and normally do not require adjustment in the field.
Replace local oscillator tube (V3).
In the event of replacement of the oscillator tube, or oscillator circuit component, complete alignment may not be necessary. Adjustment of A20, which is an overall adjustment may compensate for the change. If it doesn't, complete oscillator realignment is recommended.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

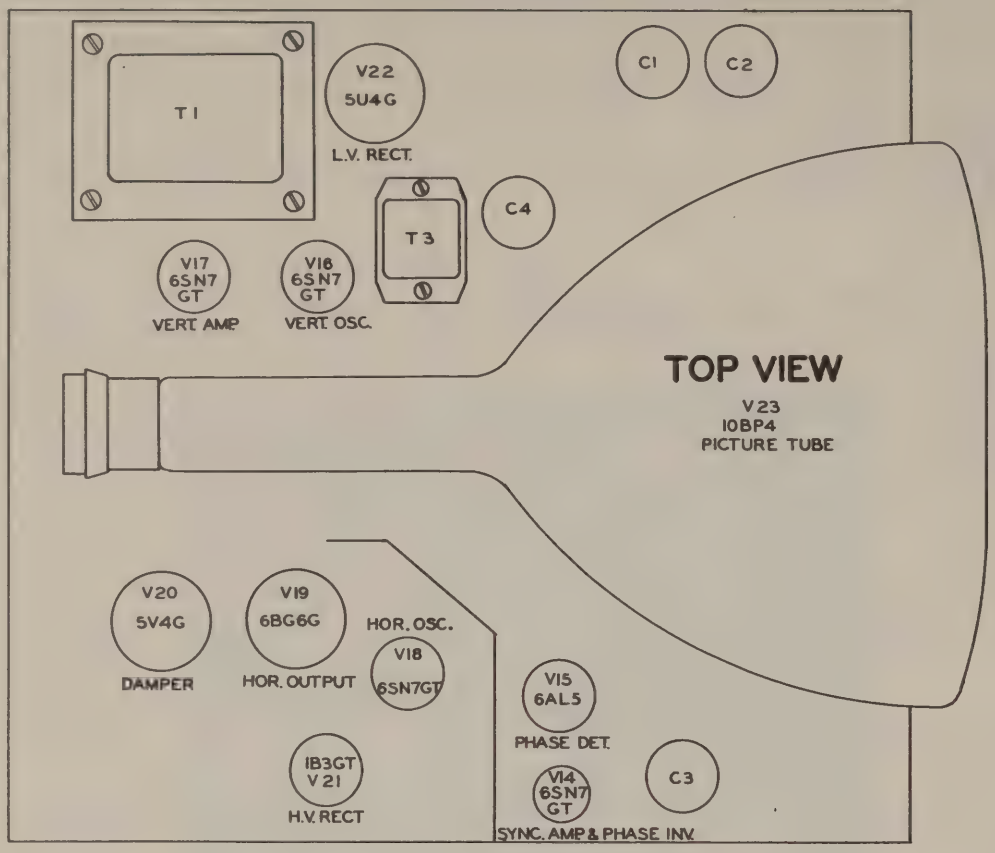
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	Across antenna terminals.	213MC (10MC Sweep)	211.25MC 215.75MC	13	Vert. Amp. to Point (A) Low side to chassis.	A8	Adjust so that markers are properly positioned as per Fig 4. If any channel markers can not be positioned properly it may be necessary to adjust A20. If A20 is adjusted all channels will be affected, and each channel will require readjustment.
			207MC (10MC Sweep)	205.25MC 209.75MC	12		A9	
			201MC (10MC Sweep)	199.25MC 203.75MC	11		A10	
			195MC (10MC Sweep)	193.25MC 197.75MC	10		A11	
			189MC (10MC Sweep)	187.25MC 191.75MC	9		A12	
			183MC (10MC Sweep)	181.25MC 185.75MC	8		A13	
			177MC (10MC Sweep)	175.25MC 179.75MC	7		A14	
			85MC (10MC Sweep)	83.25MC 87.75MC	6		A15	
			79MC (10MC Sweep)	77.25MC 81.75MC	5		A16	
			69MC (10MC Sweep)	67.25MC 71.75MC	4		A17	
			63MC (10MC Sweep)	61.25MC 65.75MC	3		A18	
			57MC (10MC Sweep)	55.25MC 59.75MC	2		A19	

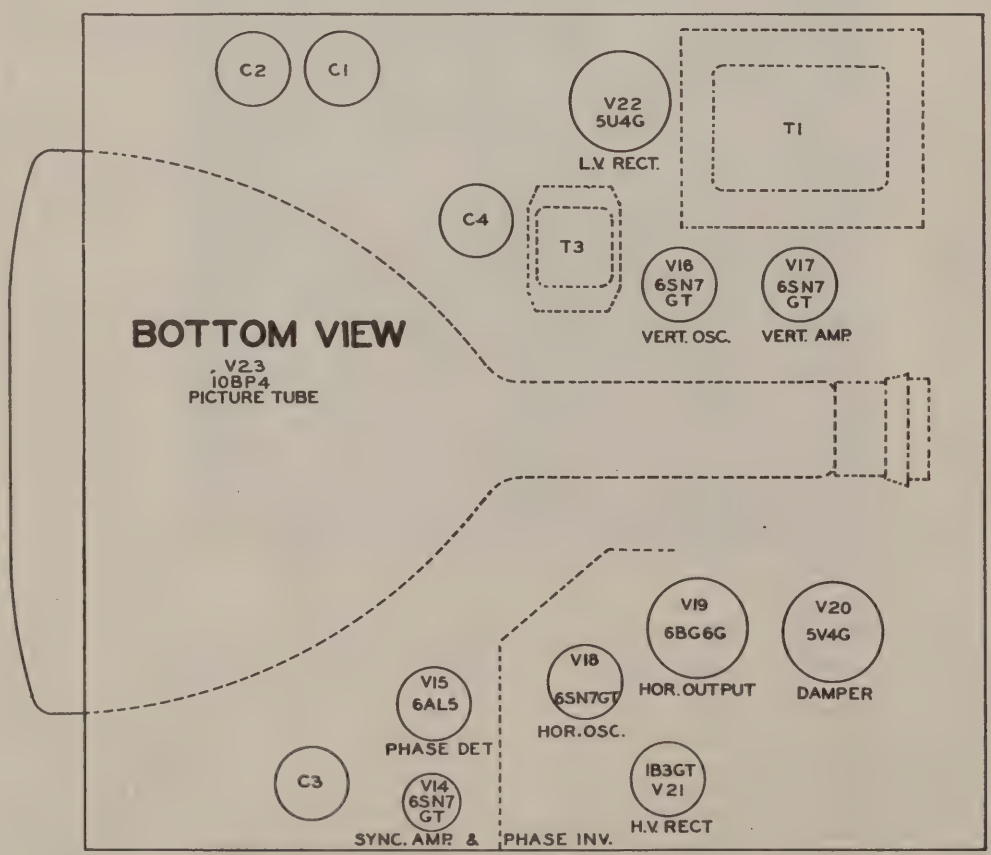




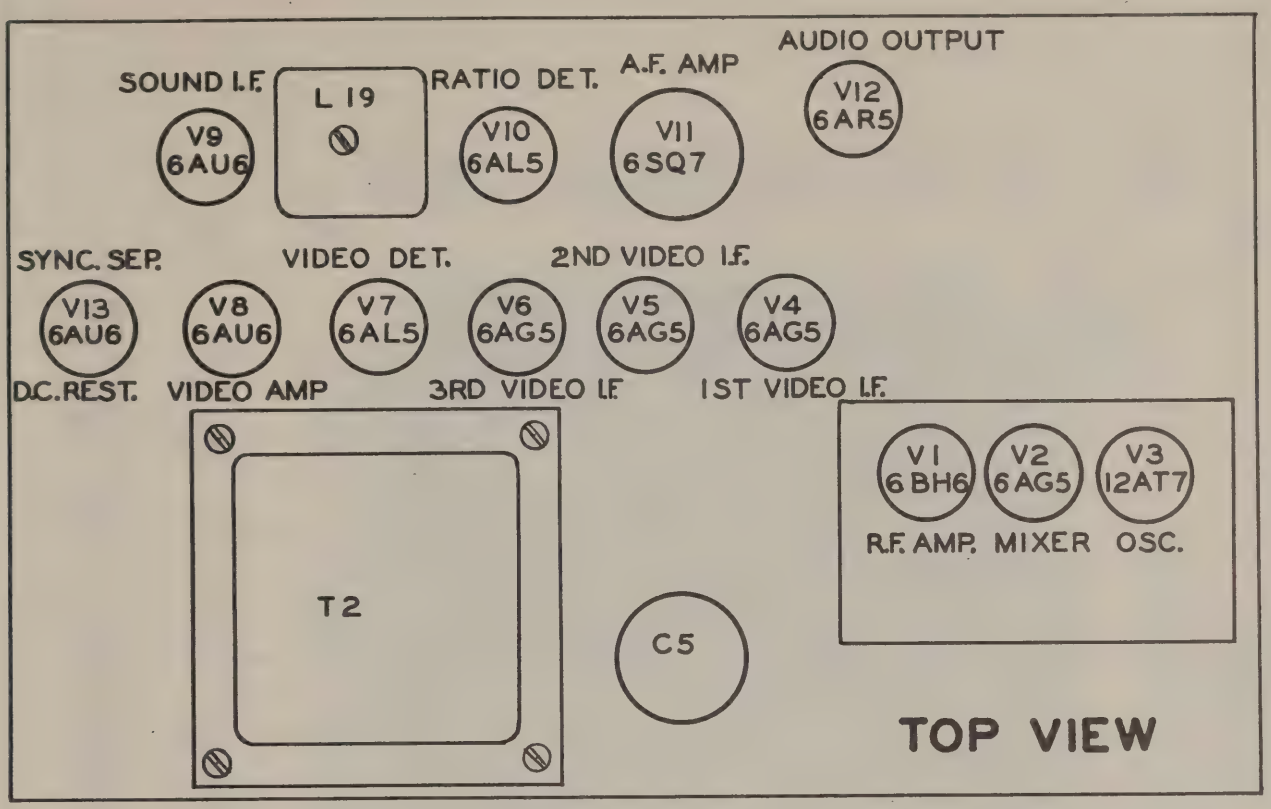


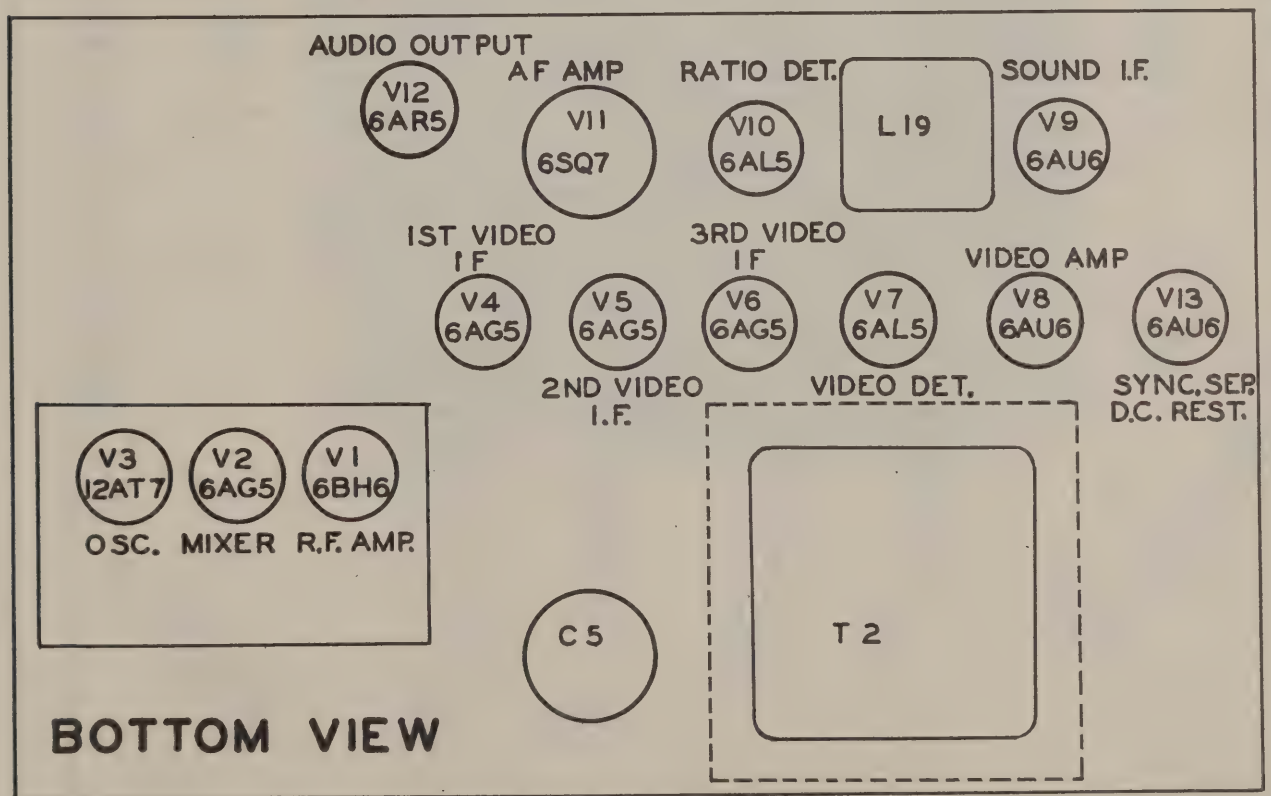




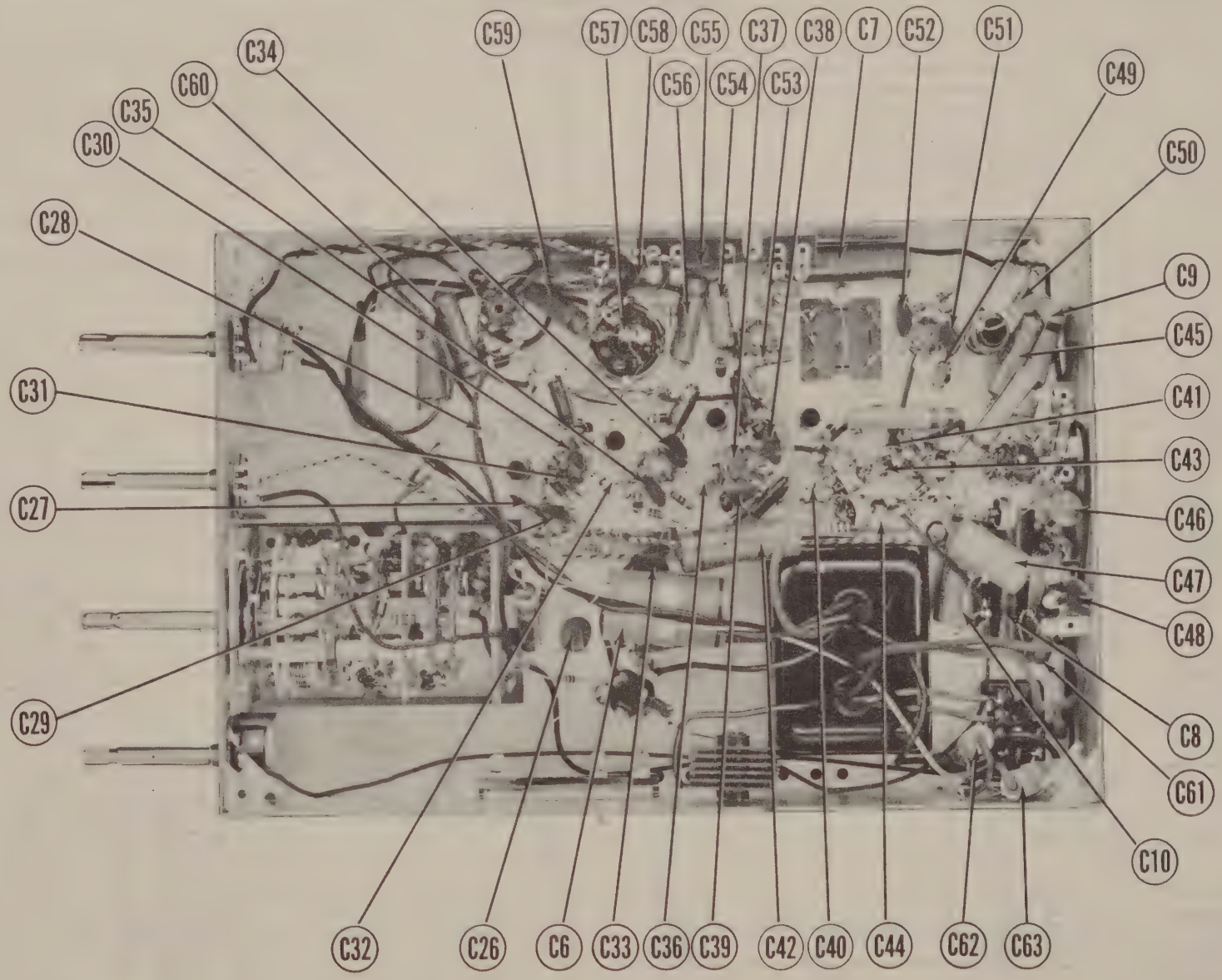


TUBE PLACEMENT-SWEEP CHASSIS

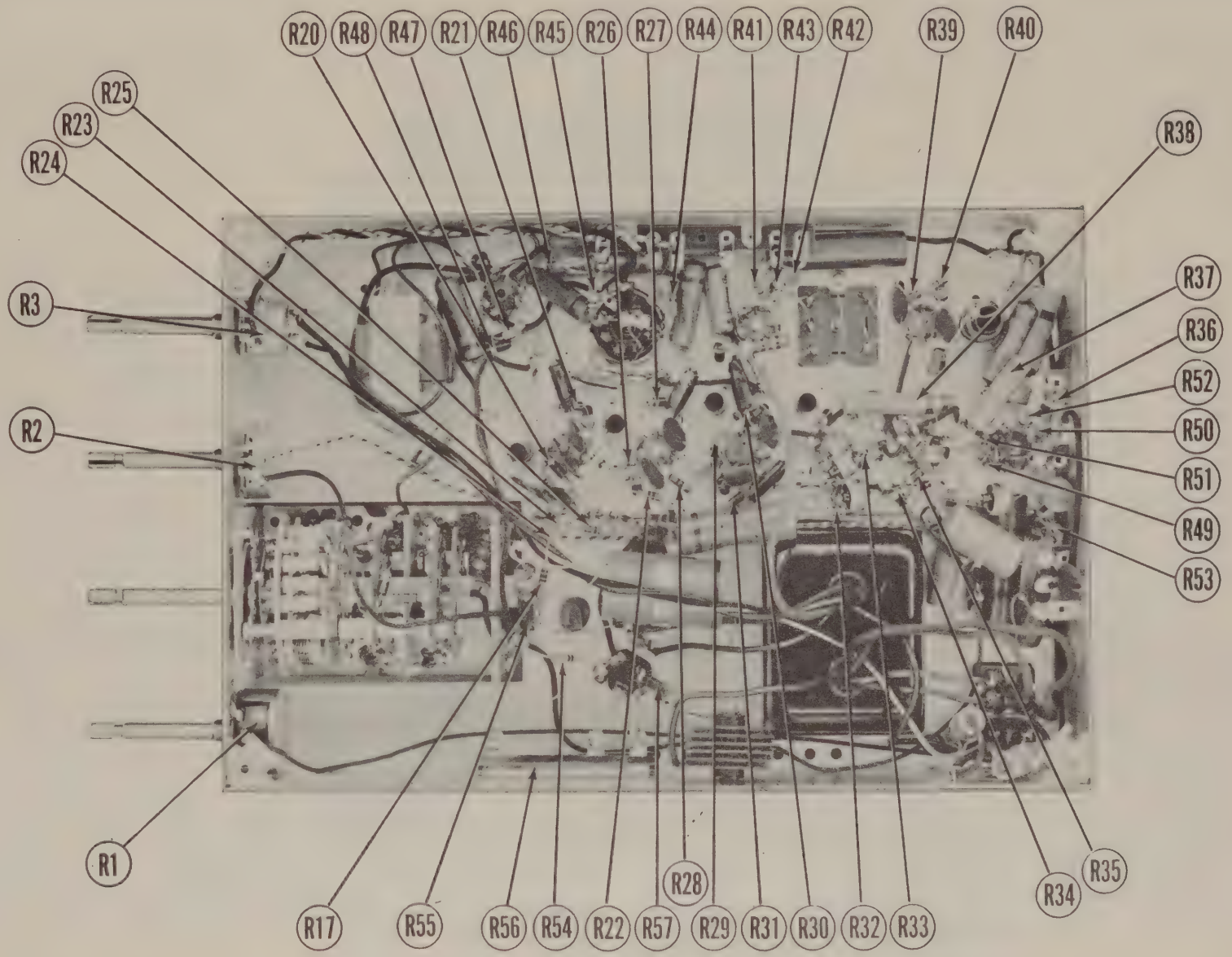




TUBE PLACEMENT- RF-IF CHASSIS



RF-IF CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



RF-IF CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATON

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	-.2VDC	.6VDC	0V	6.3VAC	210VDC	150VDC	0V		
V 2	6AG5	-1.2VDC	0V	0V	6.3VAC	260VDC	145VDC	0V		
V 3	12AT7	0V	0V	0V	0V	0V	210VDC	§-.8VDC	0V	6.3VAC
V 4	6AG5	-1.8VDC	.4VDC	6.3VAC	0V	125VDC	125VDC	.4VDC		
V 5	6AG5	-.5VDC	.3VDC	6.3VAC	0V	125VDC	125VDC	.3VDC		
V 6	6AG5	0V	1.2VDC	6.3VAC	0V	120VDC	120VDC	1.2VDC		
V 7	6AL5	0V	0V	6.3VAC	0V	0V	0V	-1VDC		
V 8	6AU6	.6VDC	0V	6.3VAC	0V	210VDC	160VDC	14VDC		
V 9	6AU6	0V	0V	6.3VAC	0V	125VDC	125VDC	1VDC		
V 10	6AL5	-.2VDC	-.1VDC	6.3VAC	0V	0V	0V	-.3VDC		
V 11	6SQ7	0V	-.6VDC	0V	0V	0V	95VDC	6.3VAC	0V	
V 12	6AR5	0V	15VDC	6.3VAC	0V	230VDC	250VDC	130VDC		
V 13	6AU6	0V	4VDC	6.3VAC	0V	87VDC	130VDC	4VDC		
V 14	6SN7GT	0V	250VDC	10VDC	0V	80VDC	0V	6.3VAC	0V	
V 17	6SN7GT	0V	400VDC	15VDC 20VDC	0V	400VDC	15VDC 20VDC	6.3VAC	0V	
V 15	6AL5	1.3VDC	-6VDC	6.3VAC	0V	-.1VDC	0V	-.1VDC		
V 16	6SN7GT	-110VDC -130VDC	290VDC	0V	-110VDC -130VDC	4VDC	0V	6.3VAC	0V	
V 18	6SN7GT	.5VDC	420VDC	18.5VDC	-4.4VDC -6.1VDC	130VDC	18.5VDC	6.3VAC	0V	
V 19	6BG6G	0V	0V	5.3VDC	0V	-4VDC	250VDC	6.3VAC	250VDC	TOP CAP *
V 20	5V4G	0V	520VDC	520VDC	400VDC	520VDC	400VDC	500VDC	520VDC	
V 21	1B3GT	* DO NOT MEASURE								
V 22	5U4G	0V	440VDC	0V	400VAC	0V	400VAC	0V	440VDC	
V 23	10BP4	0V	4VDC	PIN 10 265VDC	PIN 11 65VDC	PIN 12 6.3VAC				

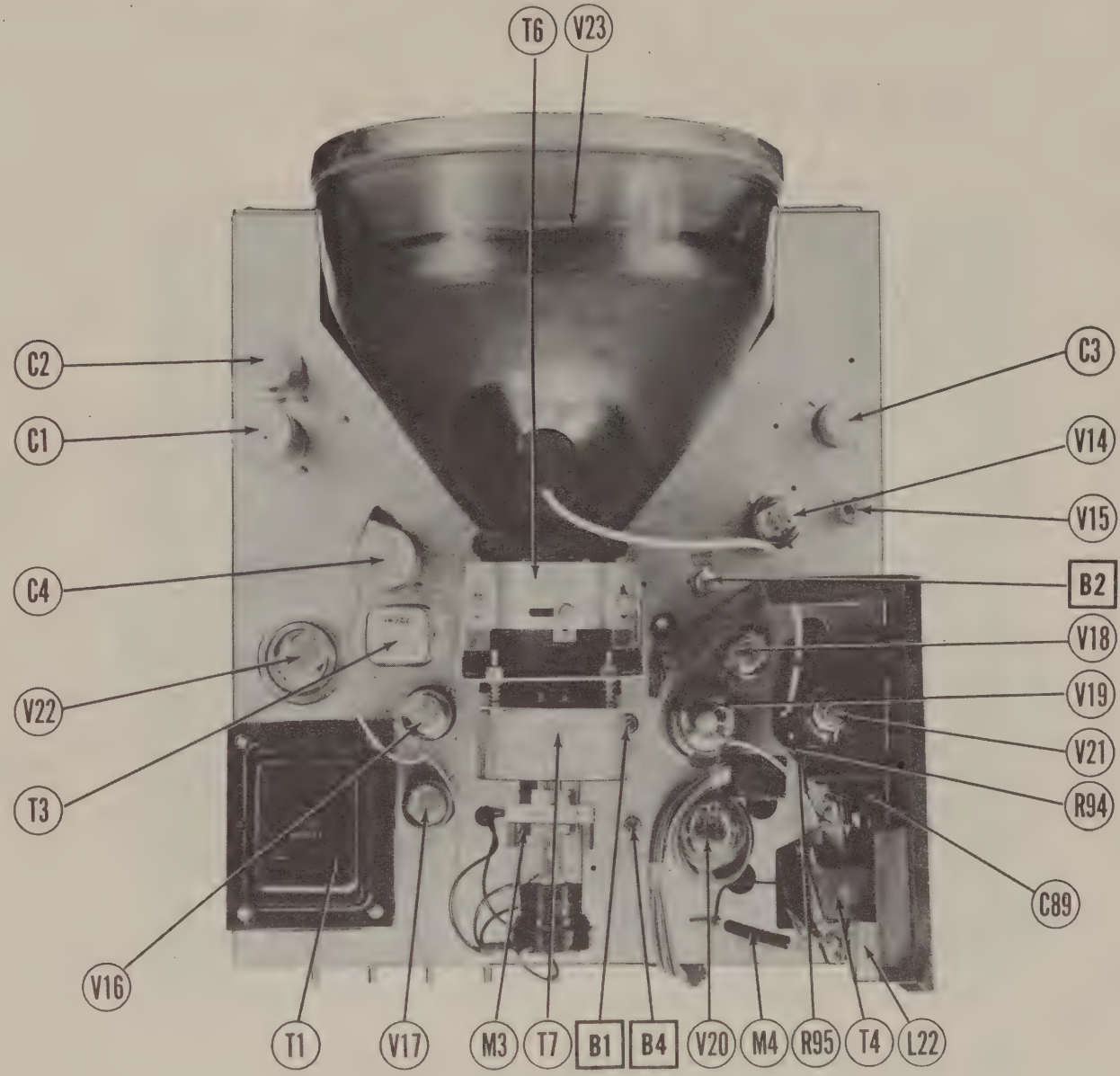
* Do Not Measure.

RESISTANCE READINGS

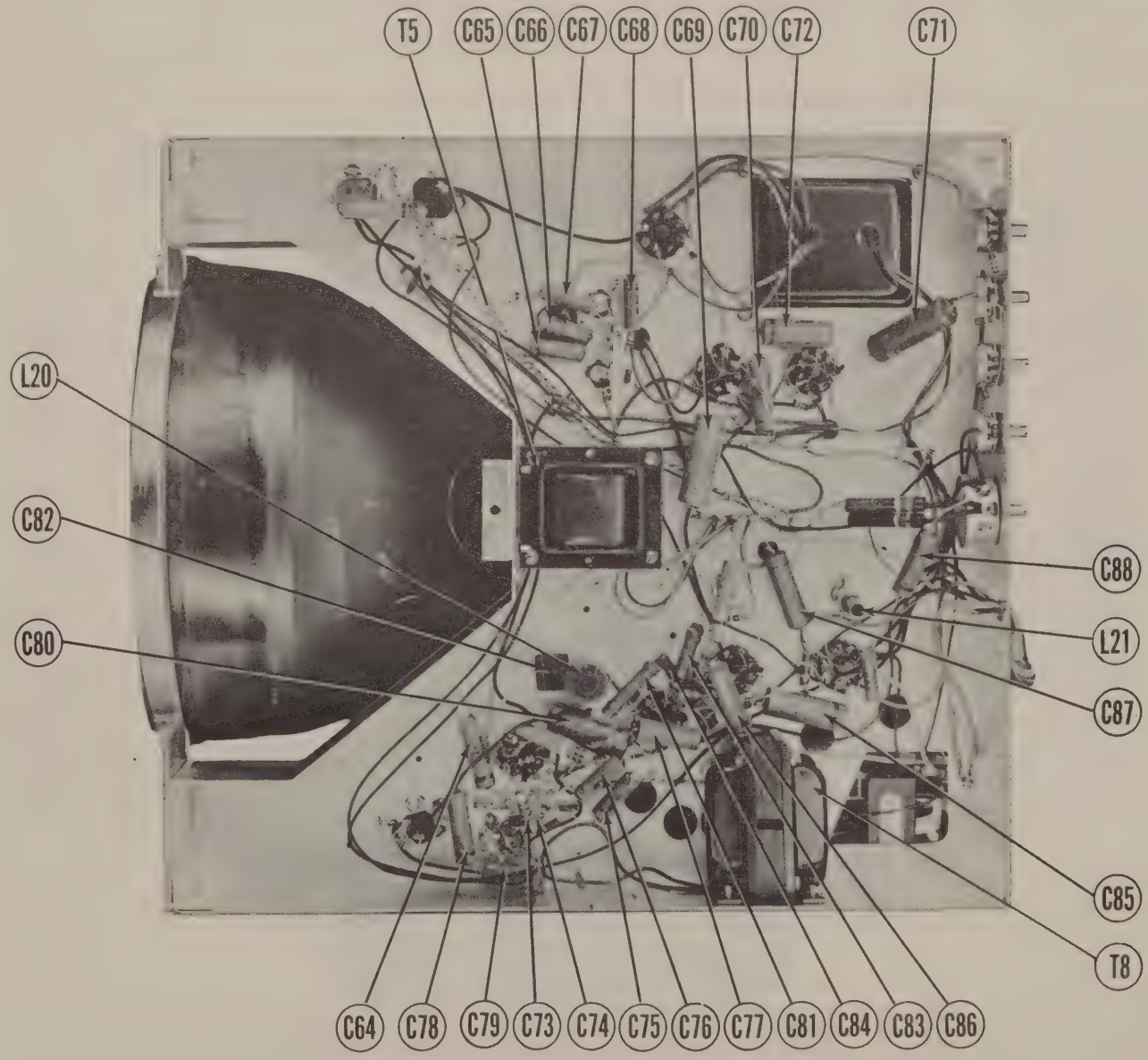
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	500KΩ	100Ω	0Ω	.1Ω	†12KΩ	†60KΩ	0Ω		
V 2	6AG5	1 Meg.	0Ω	0Ω	.1Ω	†3KΩ	†85KΩ	0Ω		
V 3	12AT7	0Ω	0Ω	0Ω	0Ω	0Ω	†7K	10KΩ	0Ω	.1Ω
V 4	6AG5	310KΩ	100Ω	.1Ω	0Ω	♦1.5KΩ	♦1.5KΩ	100Ω		
V 5	6AG5	310KΩ	47Ω	.1Ω	0Ω	♦1.5KΩ	♦1.5KΩ	47Ω		
V 6	6AG5	2.7KΩ	100Ω	.1Ω	0Ω	♦1.5KΩ	♦1.5KΩ	100Ω		
V 7	6AL5	0Ω	Inf.	.1Ω	0Ω	Inf.	0Ω	8.2KΩ		
V 8	6AU6	1 Meg.	0Ω	.1Ω	0Ω	†8KΩ	†8KΩ	1000Ω		
V 9	6AU6	1Ω	0Ω	.1Ω	0Ω	♦1.5KΩ	1.5KΩ	180Ω		
V 10	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	13KΩ		
V 11	6SQ7	0Ω	10 Meg.	0Ω	Inf.	Inf.	†440KΩ	.1Ω	0Ω	
V 12	6AR5	470KΩ	390Ω	.1Ω	0Ω	†2.5KΩ	†2KΩ	♦550Ω		
V 13	6AU6	1 Meg.	22KΩ	.1Ω	0Ω	♦220KΩ	♦500Ω	22KΩ		
V 14	6SN7GT	1 Meg.	†10KΩ	5KΩ	2.2KΩ	†22KΩ	0Ω	.1Ω	0Ω	
V 17	6SN7GT	4.7 Meg.	†1000Ω	5KΩ 1000Ω	4.7 Meg.	†1000Ω	5KΩ 1000Ω	.1Ω	0Ω	
V 15	6AL5	750KΩ	750KΩ	.1Ω	0Ω	30KΩ	0Ω	30KΩ		
V 16	6SN7GT	1.7 Meg. 750KΩ	†100KΩ	0Ω	1.7 Meg. 750KΩ	♦5 Meg.	0Ω	.1Ω	0Ω	
V 18	6SN7GT	220KΩ	♦10KΩ	1.5KΩ	150KΩ 100KΩ	♦330KΩ	1.5KΩ	.1Ω	0Ω	
V 19	6BG6G	Inf.	0Ω	100Ω	15Ω	470KΩ	8KΩ	.1Ω	†8KΩ	TOP CAP ♦200Ω
V 20	5V4G	Inf.	170KΩ	170KΩ	240Ω	170KΩ	240Ω	170KΩ	170KΩ	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦460Ω
V 22	5U4G	Inf.	20KΩ	Inf.	50Ω	Inf.	45Ω	Inf.	20KΩ	
V 23	10BP4	0Ω	22KΩ	PIN 10 †1.5KΩ	PIN 11 160KΩ	PIN 12 .1Ω				

† Measured From Pin 8 Of V22.
♦ Measured From Output Of M1.
♦ Measured From Pin 8 Of V20.

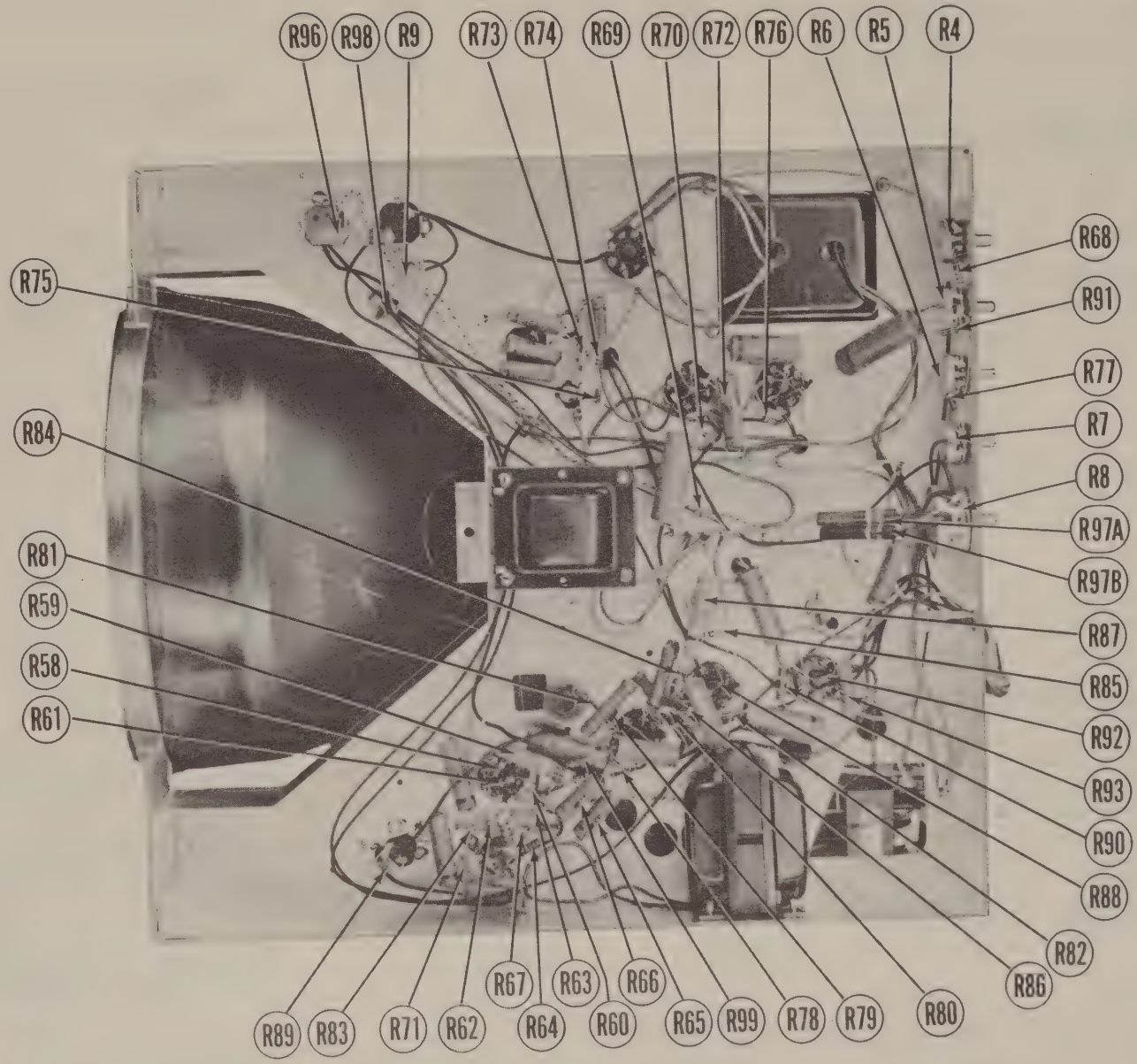
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



SWEEP CHASSIS-TOP VIEW



SWEEP CHASSIS-CAPACITOR IDENTIFICATION



SWEEP CHASSIS-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BH6	6BH6	7CM	
V2	Mixer	6AG5	6AG5	7BD	
V3	Oscillator	12AT7	12AT7	5A	
V4	1st Video IF Amp.	6AG5	6AG5	7BD	
V5	2nd Video IF Amp.	6AG5	6AG5	7BD	
V6	3rd Video IF Amp.	6AG5	6AG5	7BD	
V7	Video Det.-AGC	6AL5	6AL5	6BT	
V9	Video Amp.	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11	AF Amp.	6BQ7	6BQ7	8Q	
V12	Audio Output	6AR5	6AR5	6CC	
V13	Sync. Sep.	6AU6	6AU6	7BK	
V14	Sync. Amp.-Phase Splitter	6SN7GT	6SN7GT	8BD	
V15	Phase Det.	6AL5	6AL5	6BT	
V16	Vert. Osc.	6SN7GT	6SN7GT	8BD	
V17	Vert. Amp.	6SN7GT	6SN7GT	8BD	
V18	Ver. Osc.	6SN7GT	6SN7GT	8BD	
V19	Hor. Output	6BQ6G	6BQ6G	5BT	
V20	Damper	5U4G	5U4G	5L	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	
V23A	Picture Tube	10BP4	10BP4	12D	Used in models 401 and 402 series.
B	Picture Tube	12LP4	12LP4	12D	Used in model 406 series.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	25E36	AFH128J	UP11CJ		D12114	▲ Filter
B	40	450			835			▲ Filter
C2A	4	450	23E37	AF88J	UP4445		TVL-64	▲ Decoupling
B	40	450						▲ Filter
C3A	10	450	25E38	AF32J	UP1145		EL-151	■ Decoupling
B	15	450						▲ Decoupling
C4	1000	25	25E39	AF200A	UP1M -25		D12115	Vert. Output Cath. Byp.
C5A	50	150	25E30	AF88BD	UP5515		D12112	■ Filter
B	50	150			BR3015			▲ Filter
C	50	150						Filter
C6	40	300	25E31	PRS450/40	BR4035		TVA-24	Decoupling
C7	10	25	25E8	PRS25/10	BBR10-25		TVA-5	Stabilizing Cap
C8	10	25	25E28	PRS25/10	BBR10-25		TVA-5	Sync. Sep. Cath. Byp.
C9	10	250	25E35	PRS250/12	BR1225		UT-201	V Amp. Screen Bypass
C10	100	10	25E12	PRS12/100	BR1151		UHC-112	V Amp. Cath. Bypass
C11	680					GP2K-750		RF Coupling
C12	680					GP2K-750		RF Cath. Bypass
C13	680					GP2K-750		AGC Filter
C14	68C					GP2K-750		RF Screen Bypass
C15	50					GP1K50		RF Coupling
C16	.68							RF Coupling
C17	.47							RF Coupling
C18	1.5					NP0K-1.5		RF Coupling
C19	25					GP1K-25		RF Coupling
C20	5000							Mixer Screen Bypass
C21	1.5					NP0K-1.5		Osc. Coupling
C22	680					GP2K-750		Osc. Plate Bypass
C23	3					NP0K-3		Osc. Feedback
C24	20					GP1K-25		Osc. Grid Cap ††
C25	680					GP2K-750		Osc. Fil. Bypass
C26	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	Filament Bypass
C27	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	Mixer Plate Dec.
C28	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C29	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	AGC Filter
C30	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	1st V IF Fil. Bypass
C31	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	1st V IF Decoupling
C32	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-25	IF Cqupling
C33	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	AGC Filter
C34	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	2nd V IF Fil. Bypass
C35	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	2nd V IF Decoupling
C36	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C37	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Cath. Bypass
C38	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Fil. Bypass
C39	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	3rd V IF Decoupling
C40	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	IF Coupling
C41	5		23E28	1468-000005	5W5V5	NP0K-5	MS-55	V Diode Filter
C42	.25	200	23E222	P488-25	GT2F25		TC-2	AGC Filter
C43	5		23E29	1468-000005	5W5V5	NP0K-5	MS-55	RF Bypass
C44	.1	200	23E2014-9	P286-1	GT2P1		TM-1	Video Coupling
C45	.02	400	23E413	P488-02	GT4J2		TM-12	V Amp. Screen Bypass
C46	.1	400	23E2014-23	P488-1	GT4P1		TM-1	Video Coupling
C47	.2	400	23E2014-22	P488-22	GT4P2		TC-2	Video Coupling
C48	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	Pic Tube Cath. Dec.
C49	2		23E21					S IF Coupling
C50	3		23E13			N750K-3		Fixed Trimmer
C51	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	S IF Cath. Bypass
C52	5000		23E2025	1467-005	1D5D5	GP2M-005	1FM-25	S IF Decoupling
C53	1000		23E2012	1468-001	1W5D1	GP2L-001	1FT-21	Diode Load Cap
C54	.002	400	23E405	P688-002	GT6D2	GP2M-002	TM-22	De-emphasis
C55	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C56	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C57	100		23E11	1468-0001	5W5T1	GP1K-100	1FM-31	AF Plate Bypass
C58	.25	200	23E222	P488-25	GT2F25		TC-2	AF Plate Decoupling
C59	.01	400	23E411	P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C60	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Output Plate Bypass

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C61	.05	200	23E216	P288-05	GT285		TM-15	Sync. Coupling
C62	.01	220AC	23E250	P688-01	GT6S1		TM-11	Line Filter
C63	.01	220AC	23E250	P688-01	GT6S1		TM-11	Line Filter
C64	.05	400	23E416	P488-05	GT485		TM-15	Sync. Coupling
C65	.002	400	23E405	P688-002	GT6D2	GP2M-002	TM-22	Integrator Net
C66	.002	400	23E405	P688-002	GT6D2	GP2M-002	TM-22	Integrator Net
C67	.002	400	23E405	P688-002	GT6D2	GP2M-002	TM-22	Integrator Net
C68	.005	400	23E408	P688-005	GT6D5	GP2M-005	TM-25	Vert. Osc. Grid Cap
C69	.2	400	23E420	P488-22	GT4P2		TC-2	Vert. Osc. Plate Dec.
C70	.05	400	23E416	P488-05	GT485		TM-15	Vert. Discharge
C71	.1	600	23E618	P688-1	GT6P1		TM-1	Vert. Osc. Plate Dec.
C72	.1	400	23E418	P488-1	GT4P1		TM-1	Vert. Sweep Coupling
C73	1000		23E2012	1468-001	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling
C74	1000		23E2012	1468-001	1W5D1	GP2L-001	1FT-21	Hor. Sync. Coupling
C75	.002	400	23E407	P688-002	GT6D2	GP2M-002	TM-22	AFC Filter
C76	.002	400	23E405	P688-002	GT6D2	GP2M-002	TM-22	AFC Filter
C77	.05	400	23E416	P488-05	GT485		TM-15	AFC Filter
C78	.05	400	23E416	P488-05	GT485		TM-15	AFC Feedback
C79	.003	400	23E406	P688-003	GT6D3	GP2M-003	TM-23	Voltage Divider
C80	.25	200	23E222	P488-25	GT2F25		TC-2	AFC Filter
C81	250		23E2030-3	1468-00025	5W5T25	GP2K-250	1FM-325	Hor. Osc. Feedback
C82	4000	500	23E36	1464-004	1DR5D4	1R5D4	MS-24	Fixed Trimmer
C83	250		23E2030-3	1468-00025	5W5T25	GP2K-250	1FM-325	Hor. Sweep Coupling
C84	400		23E2030-4	1468-0004	5W5T4		1FM-34	Hor. Discharge
C85	.25	200	23E222	P488-25	GT2F25		TC-2	Hor. Output Cath. Byp.
C86	.05	400	23E416	P488-05	GT485		TM-15	Hor. Output Screen Byp.
C87	.1	400	23E418	P488-1	GT4P1		TM-1	Damper Filter
C88	.05	400	23E416	P488-05	GT485		TM-15	Damper Filter
C89	500	1000	23E2089			410-500		H V Filter
C90	125		23E2030-7					Hor. Def. Coil Shunt*
C91	680							RF Bypass

† Some Models Use 25MTF In This Application.
* Not Used in All Models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1	1000Ω	2	28E31		43-1000	Contrast Control (Wire Wound)
R2A	25KΩ	½	28E32	Q11-120	AM-40-S	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A Per Instructions
R3A	500KΩ	½	28E33	Q13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A Per Instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R3A Per Instructions
R4	1 Meg.	½	28E36	Q11-137	M-61-S	Vertical Hold Control
R5	250KΩ	½	28E45	Q11-130	M-55-S	Height Control
R6	500KΩ	½	28E44	Q11-114	M-10-S	Vertical Linearity Control
R7	50KΩ	½	28E43	Q11-123	M-44-S	Horizontal Hold Control
R8	1500Ω	2	28E42		10-1500	Focus Control (Wire Wound)
R9	20Ω	2	28E49			Horizontal Centering Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R10	22KΩ	½			RF Grid 20%
R11	100Ω	½			RF Cathode 20%
R12	10KΩ	½			RF Plate 20%
R13	56KΩ	½			RF Screen 20%
R14	4700Ω	½			Mixer Coil Shunt 20%
R15	1 Meg.	½			Mixer Grid 20%
R16	82KΩ	½			Mixer Screen 20%
R17	1000Ω	½			Mixer Plate Decoup.
R18	68000Ω	1			Osc. Plate 20%
R19	10KΩ	½			Osc. Grid 20%
R20	3300Ω	½	27E2332		1st Video IF Grid
R21	100Ω	½	27E101		1st Video IF Cathode
R22	1000Ω	½	27E102	BTS-1000	1st Video IF Decoup.
R23	470KΩ	½	27E474	BTS-470K	AGC Network 20%
R24	470KΩ	½	27E474	BTS-470K	AGC Network 20%
R25	10KΩ	½	27E103	BTS-10K	AGC Network
R26	4700Ω	½	27E472	BTS-4700	2nd Video IF Grid
R27	47Ω	½	27E470		2nd Video IF Cathode
R28	1000Ω	½	27E102	BTS-1000	2nd Video IF Decoup.
R29	2700Ω	½	27E272	BTS-2700	3rd Video IF Grid
R30	100Ω	½	27E101		3rd Video IF Cathode
R31	1000Ω	½	27E102	BTS-1000	3rd Video IF Decoup.
R32	470KΩ	½	27E474	BTS-470K	AGC Network 20%
R33	6800Ω	½	27E822	BTS-6800	Video Det. Diode Load
R34	1 Meg.	½	27E105	BTS-1 Meg.	Video Amp. Grid 20%
R35	68Ω	½	27E680	BW-1-68	Video Amp. Cathode
R36	68000Ω	1	27E682-3	BTA-6800	Video Amp. Plate
R37	6800Ω	2	27E682-5	BT-2-6800	Video Amp. Screen
R38	15Ω	2	27E153-5	BT-2-15K	Bleeder
R39	18Ω	½	27E181		Sound IF Cathode
R40	1000Ω	½	27E102	BTS-1000	Sound IF Decoup.
R41	6800Ω	½	27E682-2	BTS-6800	Ratio Det. Diode Load
R42	6800Ω	½	27E682-2	BTS-6800	Ratio Det. Diode Load
R43	39KΩ	½	27E393	BTS-39K	De-emphasis
R44	10 Meg.	½	27E106	BTS-10 Meg.	AF Grid 20%
R45	220KΩ	½	27E224	BTS-220K	AF Plate 20%
R46	220KΩ	½	27E224	BTS-220K	AF Plate 20%
R47	470KΩ	½	27E474	BTS-470K	Output Grid
R48	390Ω	2	27E391-5	BT-2-390	Output Cathode
R49	1 Meg.	½	27E105	BTS-1 Meg.	Sync. Sep. Grid 20%
R50	220KΩ	½	27E224	BTS-220K	Sync. Sep. Plate 20%
R51	22KΩ	½	27E223	BTS-22K	Sync. Sep. Cathode
R52	100KΩ	½	27E104	BTS-100K	Phase Correction 20%

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R53	150KΩ	½	27E154	BTS-150K	Voltage Divider 20%
R54	22KΩ	½	27E223	BTS-22K	Voltage Divider
R55	470Ω	2	27E471-5	BW-2-470	Filter Wire Wound
R56A	400Ω	5	27E1006	AB-400	Filter Wire Wound
B	120Ω	5		AB-125	Filter Wire Wound
R57	33Ω	1	27E330-3		Surge Limiter
R58	220Ω	½	27E222	BTS-2200	Sync. Amp. Grid
R59	22KΩ	2	27E223-5	BT-2-22K	Sync. Amp. Plate
R60	1 Meg.	½	27E105-2	BTS-1 Meg.	Sync. Phase Inverter Grid 20%
R61	4700Ω	½	27E472-2	BTS-4700	Sync. Phase Inverter Cathode
R62	4700Ω	½	27E472-2	BTS-4700	Sync. Phase Inverter Plate
R63	4700Ω	½	27E472-2	BTS-4700	Sync. Phase Inverter Plate
R64	33KΩ	½	27E333-2	BTS-33K	Horiz. AFC Diode Load
R65	470KΩ	½	27E474-2	BTS-470K	Horiz. AFC Diode Load
R66	470KΩ	½	27E474-2	BTS-470K	Horiz. AFC Diode Load
R67	33KΩ	½	27E333-2	BTS-33K	Horiz. AFC Diode Load
R68	68KΩ	½	27E683-2	BTS-68K	Vert. Osc. Grid
R69	100KΩ	½	27E104-2	BTS-100K	Vert. Osc. Plate Decoup.
R70	6800Ω	½	27E682-2	BTS-6800	Vert. Peaking
R71	27KΩ	½	27E273-2	BTS-27K	Phase Det. Cathode
R72	4.7 Meg.	½	27E475-2	BTS-4.7 Meg	Vert. Discharge Plate
R73	8200Ω	½	27E822-2	BTS-8200	Integrator
R74	8200Ω	½	27E822-2	BTS-8200	Integrator
R75	22KΩ	½	27E223-2	BTS-22K	Integrator
R76	4.7 Meg.	½	27E475-2	BTS-4.7 Meg	Vert. Amp. Grid 20%
R77	1000Ω	½	27E102-2	BTS-1000	Vert. Amp. Cathode
R78	220KΩ	½	27E224-2	BTS-220K	Horiz. Osc. Grid 20%
R79	150Ω	½	27E152-2	BTS-1500	Horiz. Osc. Cathode
R80	100KΩ	½	27E104-2	BTS-100K	Horiz. Osc. Grid 20%
R81	56000Ω	½	27E1009-8	BTS-5600-5%	Horiz. Osc. Plate 5%
R82	330KΩ	½	27E1009-9	BTS-330-5%	Horiz. Osc. Plate 5%
R83	4700Ω	½	27E472-2	BTS-4700	Feed Back
R84	47Ω	½	27E470-2		Parasitic Supp.
R85	470KΩ	½	27E474-2	BTS-470K	Horiz. Output Grid 20%
R86	100Ω	1	27E101-3	BW-1-100	Horiz. Output Cathode Wire Wound
R87	6800Ω	2	27E682-5	BT-2-6800	Horiz. Output Screen
R88	10Ω		27E101-2		Parasitic Supp.
R89	220Ω	½	27E222-2	BTS-2200	Filter
R90	1800Ω	1	27E182-3	BTA-1800	Filter
R91	100KΩ	½	27E104-2	BTS-100K	Voltage Divider
R92	4700Ω	½	27E472-2	BTS-4700	Horiz. Linearity Coil Shunt
R93	.65Ω	4	27E1013		Damper Filament (Wire Wound)
R94	3.3Ω	2	27E1015-4	BW-4-3.3	HV Filament (Wire Wound)
R95	1 Meg.	½	27E105		HV Filter
R96	1000Ω	2	27E102-5	BW-2-1000	Filter
R97A	270Ω	2		BW-2-270	Focus Coil Shunt Wire Wound
B	270Ω	2		BW-2-270	Focus Coil Shunt Wire Wound
R98	1200Ω	11	27E1012	AB-1200	Filter Wire Wound
R99	33KΩ	½	27E333-2	BTS-33K	AFC Filter Network

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC @ 1.35A	750VCT @ .210 ADC	5VAC @ 3A		22E30	P-8165††	TP-910††	P-8655††
T2	117VAC @ .77A	117VAC @ .035 ADC	6.3VAC @ 2A	6.3VAC @ 4A SEC. 4 6.3VAC @ 4.3A	22E27			

†† Add series resistor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T3	170Ω	950Ω	22E31	A-8121	TB0-1	A-3000	Vert.Block Osc.Trans.
T4A	430Ω Tap @ 185Ω	SEC. 1 Rd Tap @ 6Ω SEC. 2 Or	22E34 ♯	A-8117	TV8-1		Hor. Output Trans.
B			22E34-2 #				Hor. Output Trans.
T5	560Ω	6.8Ω	22E53	A-8115	TS0-1	A-3035	Vert.Output Trans.
T6A	142		22E0	DY-1			Hor. Deflection Yoke
B	68Ω						Vert. Deflection Yoke
T7	2452		20E424				Focus Coil

♯ Used in 402 series.
Used in 406 series.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T8	7200Ω	3.7Ω	600Ω	.5Ω	22E35	A-3850	RO-13	A-2900	

SENTINEL MODELS 401, 402, 406 SERIES

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1 SP1A	PM PM	3.7Ω	1E34 ‡ 1E37 #	ST-117 MOD.P8-T	8A31	‡ Used in 402 series. # Used in 401 and 406 series
	CONE DIA.	V. C. DIA.				
SP2 SP2A	7 1/4" 6" x 9"	3/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SENTINEL PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.210A	160Ω	8.5Henries	22E32	C-1721 ‡‡		C-2991‡‡	‡‡ Drill new mounting holes.

COILS (RF-IF)

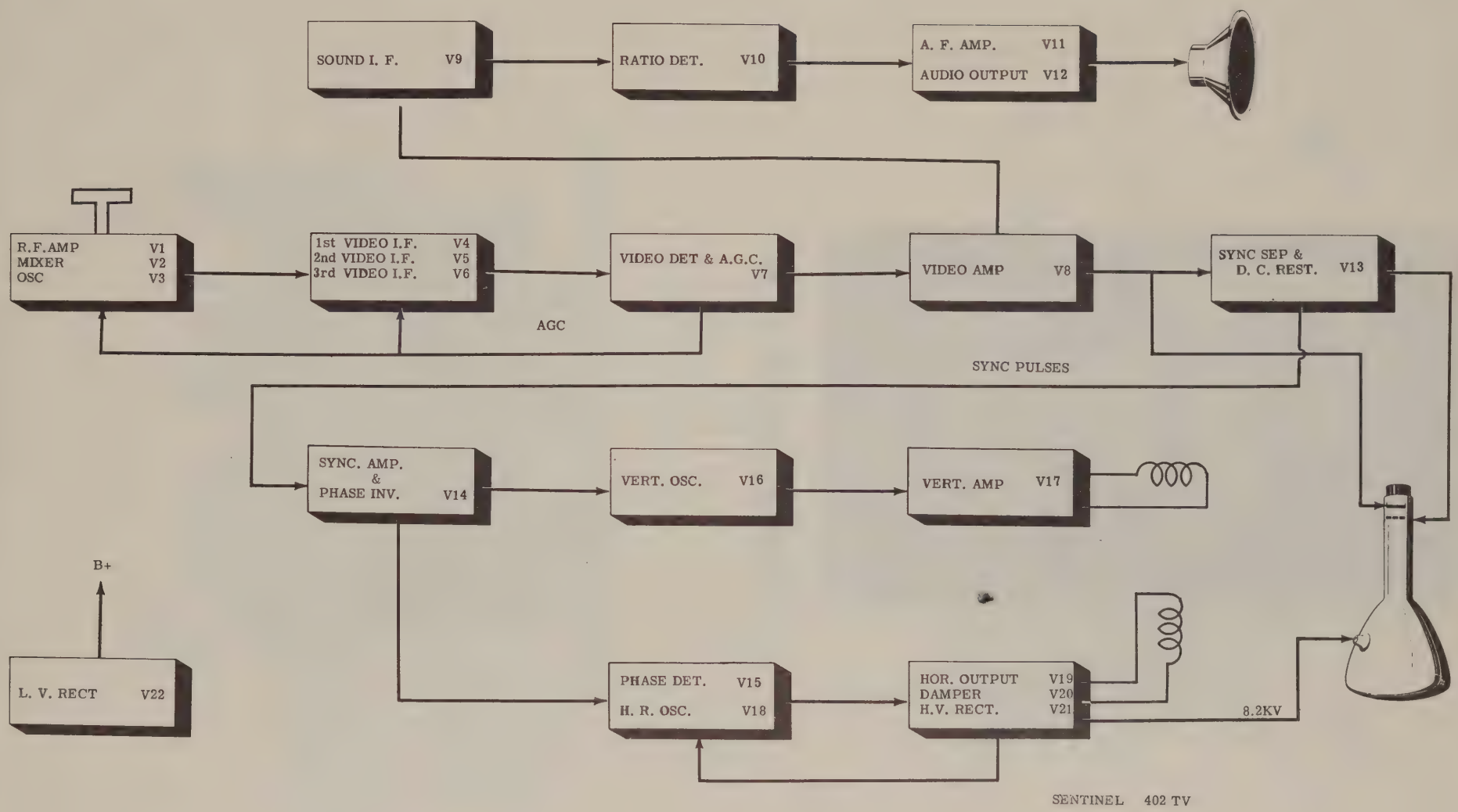
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	
L2	Ant. Loading	0Ω				For channels 7-13, part of M2.
L3	Ant. Loading	0Ω				For channels 2-6, Part of M2 wound on 1000Ω resistor.
L4	RF Choke	0Ω				
L5	1st Video IF	.1Ω		20E360		
L6	2nd Video IF	.1Ω		20E360		
L7	3rd Video IF	.1Ω		20E360		
L8	Peaking	2.5Ω		2E79		Wound on 15KΩ resistor.
L9	4th Video IF	.1Ω		20E360		
L10	Fil. Choke	.1Ω		2E78		
L11	Fil. Choke	.1Ω		2E78		
L12	Fil. Choke	.1Ω		2E78		
L13	Fil. Choke	.1Ω		2E78		
L14	Peaking	9Ω		20E363-2		Wound on 33KΩ resistor.
L15	Peaking	14.5Ω		20E363-4		Wound on 8.2KΩ resistor
L16	Peaking	13.5Ω		20E363-3		Wound on 15KΩ resistor
L17	Peaking	13Ω		20E363-5		Wound on 10Meg. resistor
L18	Sound IF	4Ω		20E361		
L19	Ratio Det. Trans.	3.5Ω	.5Ω	20E362		
L20	Hor. Osc.	60Ω		20E409		
L21	Hor. Linearity	20Ω		20E410		
L22	Width Control	.4Ω		20E415		

SELENIUM RECTIFIER

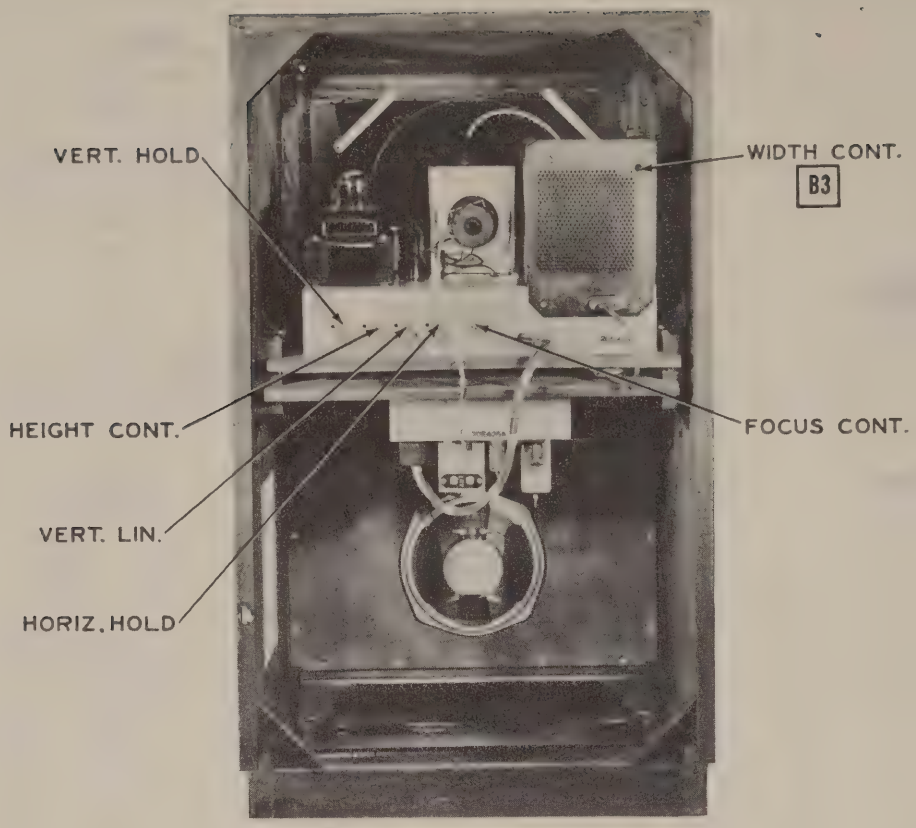
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	SENTINEL PART No.			
M1	.035A	57E3			

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M2	Tuner	20E364	Complete
M3	Ion Trap	15E122	
M4	Fuse	40E6	Type AGC .25A
	Safety Glass	9E16	For 402 series
	Safety Glass	9E19	For 401 and 406 series
	Knob	20E427-2	With pointer for 402 series.
	Knob	37E55	For 402 series
	Knob	20E477	With pointer for 401 and 406 series, mahogany
	Knob	37E58-2	For 401 and 406 series, mahogany
	Knob	20E477-2	With pointer for 401 and 406 series, blonde
	Knob	37E58-3	For 401 and 406 series, blonde
	Knob Plate	5E50	For 401 and 406 series, mahogany
	Knob Plate	5E50-2	For 401 and 406 series, blonde



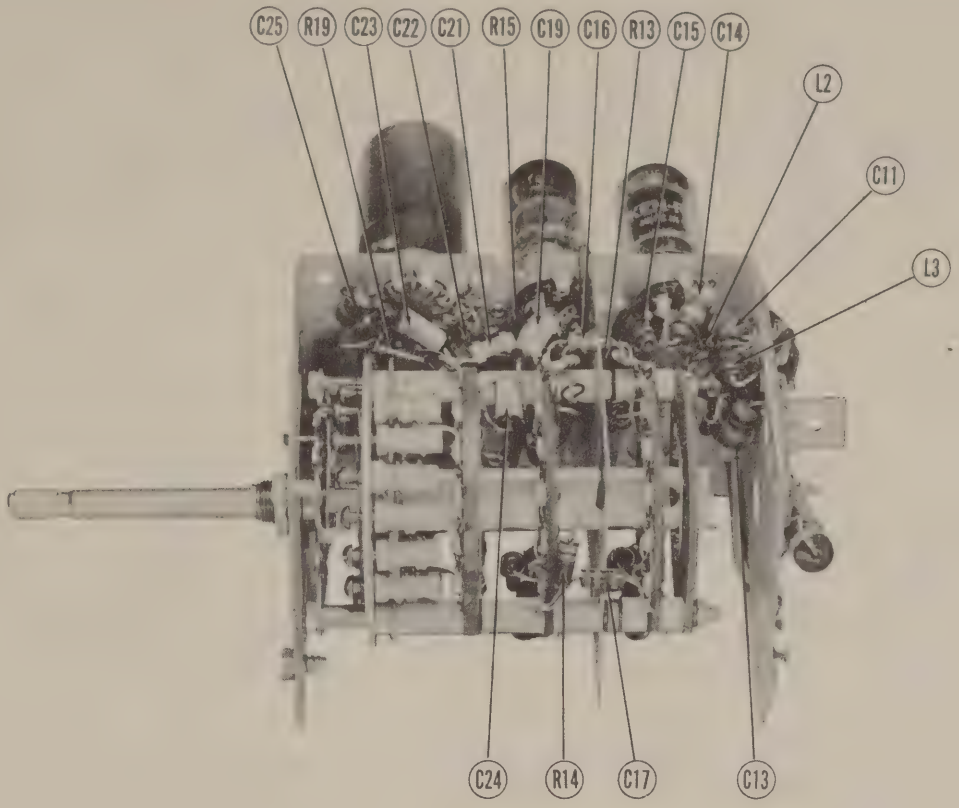
BLOCK DIAGRAM.



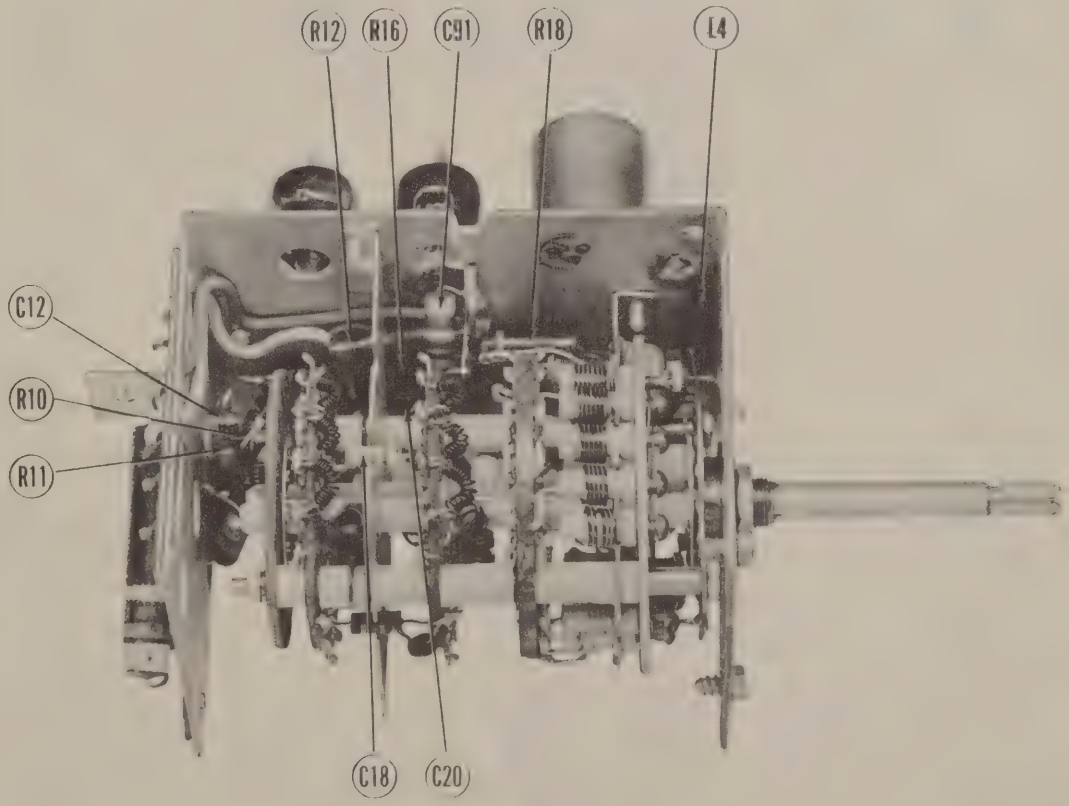
CABINET-REAR VIEW

HORIZONTAL SWEEP ADJUSTMENTS

1. Turn the horizontal drive adjustment (B1) clockwise as far as possible without crowding the right hand side of the test pattern. Insufficient horizontal drive will cause the raster to fall short of filling the mask horizontally. If it is not possible to "hold" the test pattern horizontally by adjustment of the horizontal hold control, set the horizontal hold control at the mid point of its rotation and adjust the horizontal oscillator adjustment slug (B2) until picture "syncs" horizontally.
2. Adjust the horizontal centering control and the width adjustment (B3) until the test pattern fills the mask properly in the horizontal plane.
3. Set the horizontal linearity adjustment (B4) so the test pattern is symmertrical from left to right. Slight readjustment of the horizontal drive (B1) may be necessary when making this adjustment.



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

SENTINEL
MODELS 401, 402,

PHOTOFACT* Folder

SENTINEL
MODELS 401, 402, 406 SERIES

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The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL 402CV

SENTINEL
MODELS 401, 402, 406 SERIES

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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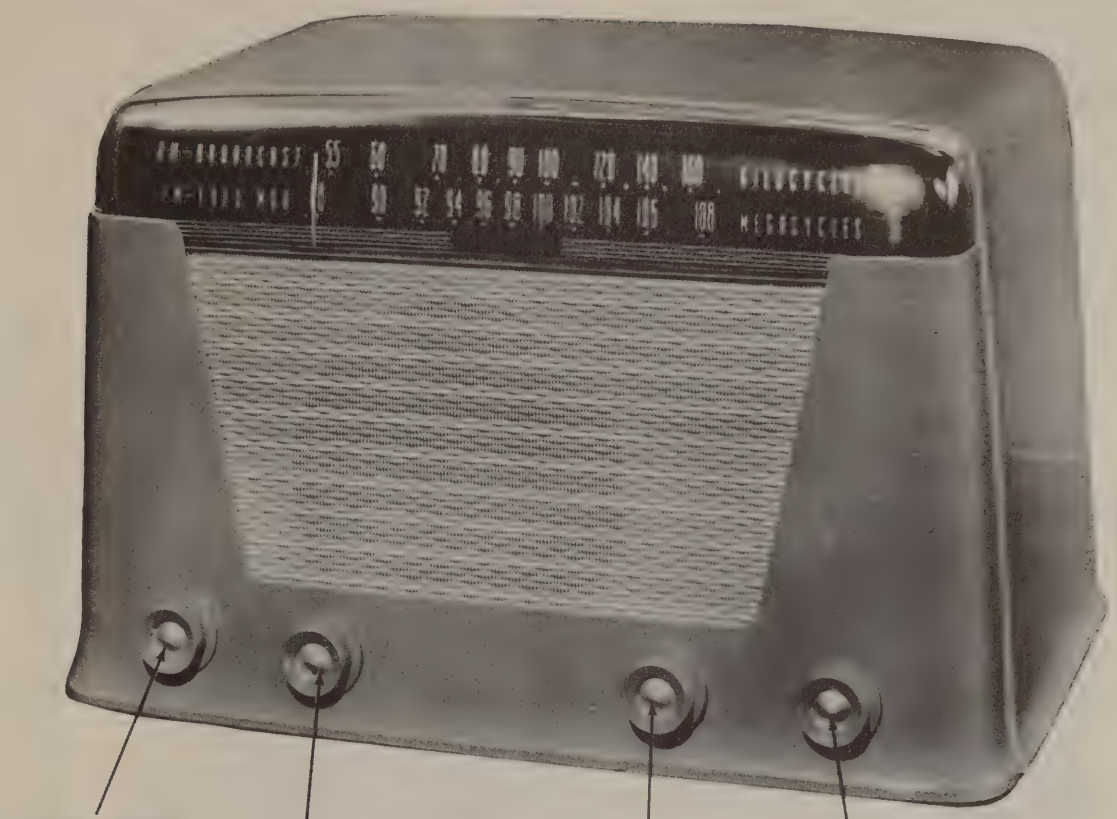
Date 9/49—No. 4918-9 Set No. 70—Folder No. 9

SILVERTONE
MODEL 8021 (Ch. 132.868)



SILVERTONE
MODEL 8021 (Ch. 132.868)

SILVERTONE MODEL 8021

TRADE NAME	Silvertone, Model 8021 (Ch. 132.868)		
SUPPLIER	Sears, Roebuck and Co., 925 South Homan St. Chicago, Illinois		
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES(SEVEN)	Types 6C4 FM RF Amp., 12BA6 RF Amp., 12BE6 Converter, 12BA6 1st IF Amp., 12BA6 2nd IF Amp., 19T8 DET-AVC-AF, 50L6GT Power Output.		
POWER SUPPLY	105-125 Volts AC-DC	RATING	.39 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC	FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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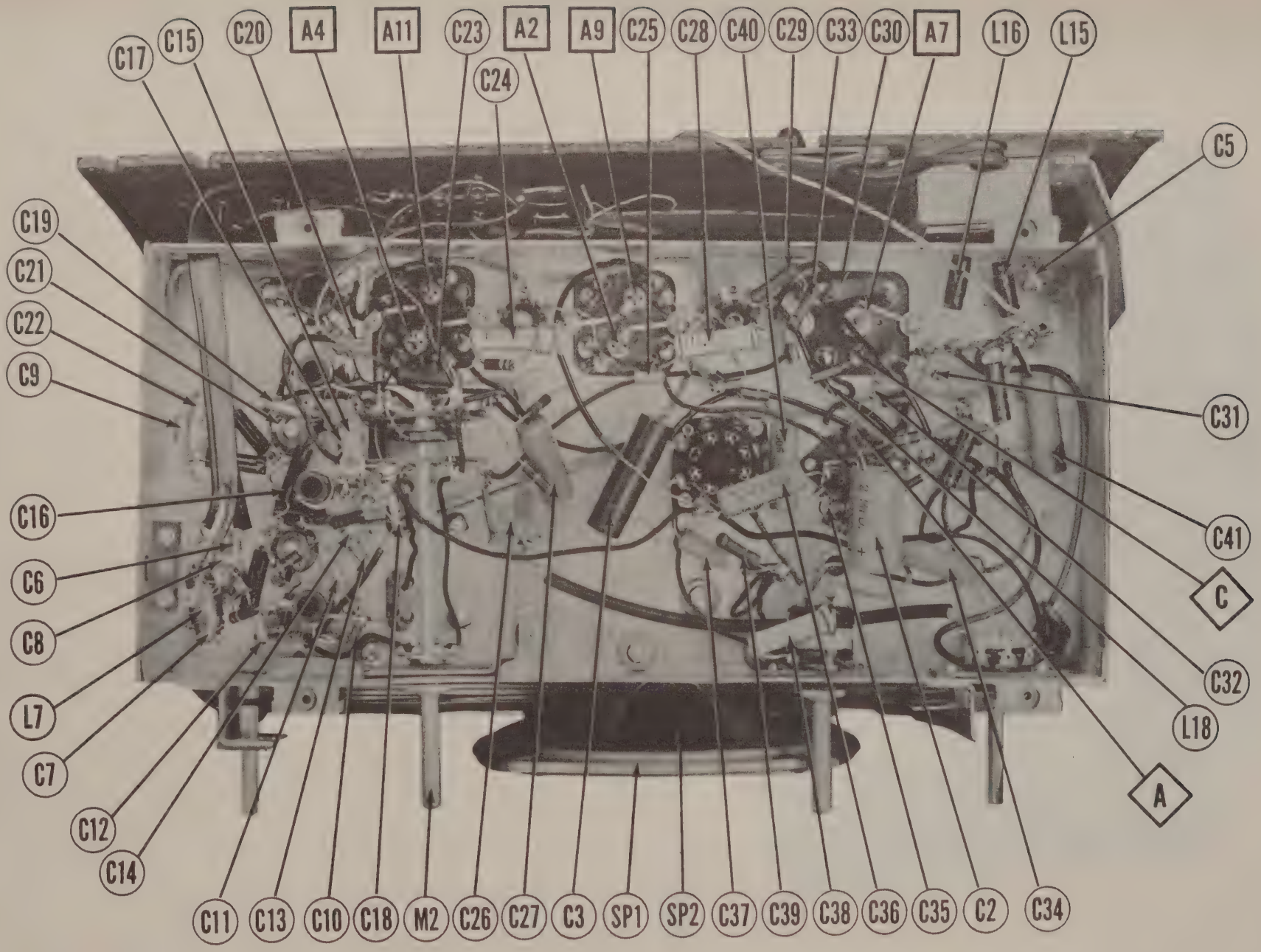
DATE 9/49 4918-10 SET #70 FOLDER #10


C17
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L4
R7
R3
R18
R20
R13
R2
R22
L17
R1

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM RF Amp.	6C4	6C4	6BG	
V2	RF Amp.	12BA6	12BA6	7BK	
V3	Converter	12BE6	12BE6	7CH	
V4	1st IF Amp.	12BA6	12BA6	7BK	
V5	2nd IF Amp.	12BA6	12BA6	7BK	
V6	DET-AVC-AF	19T8	19T8	9E	
V7	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	N21744-2*	AF886D4A†	UP 44315C†		TVL-61	▲ Filter
B	40	150		PRS150/50	UP5015		TA-305	■ Filter
C	80	150						▲ Filter
C2	20	25		PRS25/25	BR252A		TA-25	Output Cath. Bypass
C3	2	25	N22198	PRS150/4	BR415		TVA-12	Stabilizing Cap
C4	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Ext. Ant. Isolation
C5	100			1468-0001	5W5T1	GP1K-100	1FM-31	FM Ant. Coupling
C6	10			1468-00001	5W5Q1	GP1K-10	MS-41	FM Ant. Coupling
C7	10			1468-00001	5W5Q1	GP1K-10	MS-41	FM Ant. Coupling
C8	100			1468-0001	5W5T1	GP1K-100	1FM-31	1st FM RF Fil. Bypass
C9	50			1468-00005	5W5Q5	GP1K-50	1FM-45	Filament Bypass
C10	500			1468-0005	5W5T5	GP2K-500	1FM-35	FM RF Plate Dec.
C11	50			1468-00005	5W5Q5	GP1K-50	1FM-45	RF Coupling
C12	1000			1468-001	1W5D1	GP2L-001	1FM-21	AVC Filter
C13	50			1468-00005	5W5Q5	GP1K-50	1FM-45	FM 2nd RF Cath. Bypass
C14	1000			1468-001	1W5D1	GP2L-001	1FM-21	FM 2nd RF Decoupling
C15	5000			1467-005	1D5D5	GP2M-005	1FM-25	RF Bypass
C16	27			1468-000025	5W5Q25	GP1K-25	MS-425	RF Coupling
C17	27			1468-000025	5W5Q25	GP1K-25	MS-425	Osc. Grid Cap
C18	100			1469-0001	5R5T1	N750L-100	MS-31	Fixed Padder
C19	1000			1468-001	1W5D1	GP2L-001	1FM-21	Osc. Anode Bypass
C20	5000			1467-005	1D5D5	GP2M-005	1FM-25	Conv. Decoupling
C21	20				5R5Q2	NP0K-20	MS-42	Fixed Trimmer
C22	50			1468-00005	5W5Q5	GP1K-50	1FM-45	1st IF Fil. Bypass
C23	5000			1467-005	1D5D5	GP2M-005	1FM-25	AVC Filter
C24	5000			1467-005	1D5D5	GP2M-005	1FM-25	1st IF Decoupling
C25	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode Filter
C26	100			1468-0001	5W5T1	GP1K-100	1FM-31	Diode Filter
C27	.05	200		P288-05	GT2S5		TM-15	AVC Filter
C28	5000			1467-005	1D5D5	GP2M-005	1FM-25	2nd IF Cath. Bypass
C29	1000			1468-001	1W5D1	GP2L-001	1FM-21	2nd IF Fil. Bypass
C30	5000			1467-005	1D5D5	GP2M-005	1FM-25	2nd IF Decoupling
C31	220			1468-0002	5W5T2	GP2K-200	1FM-32	Diode Load Cap Note
C32	220			1468-0002	5W5T2	GP2K-200	1FM-32	Diode Load Cap Note
C33	1000			1468-001	1W5D1	GP2L-001	1FM-21	De-emphasis
C34	.01	400		P488-01	GT4S1	GP2-335-01	TM-11	Audio Coupling
C35	220			1468-0002	5W5T2	GP2K-200	1FM-32	AF Plate Bypass
C36	.005	600		P688-005	GT6D5	GP2M-005	TM-25	Audio Coupling
C37	250	500		1468-00025	5W5T25	GP2K-250	1FM-325	Output Grid Bypass
C38	5000			1467-005	1D5D5	GP2M-005	1FM-25	Tone Compensation
C39	1000			1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C40	.005	600		P688-005	GT6D5		TM-25	Output Plate Bypass
C41	.05	400		P488-05	GT4S5		TM-15	Line Filter

* 20MFD Bypass Section Not Used.
† Parallel Sections To Obtain Desired Capacity.
Note. When Either Item C31 Or C32 Are Replaced, Replace Both With Capacitors Of Equal Value.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

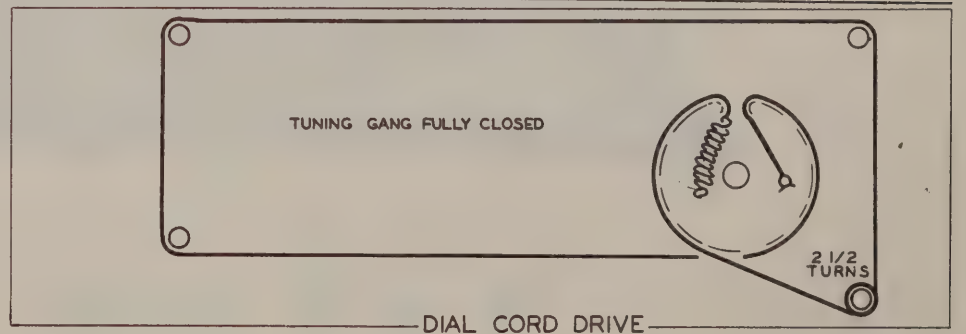
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L2	Loop Ant.	.5Ω	0Ω	N21605-1		
L3	RF Choke	1Ω		N21444-1		
L4	FM RF Coil	0Ω		N21399-1		
L5	Filament Choke	1Ω		N21444-1		
L6	Filament Choke	1Ω		N21444-1		
L7	FM Ant. Coupling	0Ω	0Ω	N21398-1		
L8	RF Choke			N21444-1		
L9	FM RF Coil			N21400-1		
L10	FM Osc.Coil	0Ω		N21397-1		
L11	AM Osc.Coil	.5Ω	5Ω	N21396-1		
L12A	FM 1st IF	1Ω	1Ω	N22195-1		
B	AM 1st IF	17.5Ω	16Ω			
L13A	FM 2nd IF	1Ω	1Ω	N22196-1		
B	AM 2nd IF	15Ω	15Ω			
L14	Ratio Det.	0Ω	0Ω	N22197-1		
L15	RF Choke	1Ω		N21444-1		
L16	RF Choke	1Ω		N21444-1		
L17	Filament Choke	1.2Ω		N21673		Iron Core
L18	Filament Choke	1.2Ω		N21673		Iron Core
L19	Filament Choke	1Ω		N21444-1		
L20	Filament Choke	1Ω		N21444-1		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SILVERTONE PART No.		NOTES
M1	Screw	110 -120V					110V 7W Mazda #C7

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M2	Switch	N21662	Band
M3	Rectifier	N20207-3	Selenium
M4	Tuning Gang	N21401-2	
	Cabinet	N21535	
	Dial Pointer	N21604	
	Knob	N22037	Tuning
	Knob	N22034	Volume
	Knob	N22035	Tone/On-Off
	Knob	N22036	Band Switch



DIAL CORD DRIVE

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	N21661	Q13-137	AM-63-Z	Volume control
B	Shaft		Not Req.	Not Req.	RS-2	Attach to R1A per instructions
R2A	500KΩ	½	N21663	Q13-133	AM-60-Z	Tone control
B	Shaft		Not Req.	Not Req.	RS-2	Attach to R2A per instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
R3	1000Ω	½		BTS-1000	FM RF Plate Decoupling
R4	15Ω	½			Parasitic Suppressor
R5	1 Meg.	½		BTS-1 Meg.	RF Grid
R6	68Ω	½		BW-½-68	RF Cathode
R7	330Ω	½		BTA-330	RF Decoupling
R8	12Ω	½			Parasitic Suppressor
R9	330Ω	½		BTA-330	Conv. Decoupling
R10	22KΩ	½		BTS-22K	Osc. Grid
R11	100KΩ	½		BTS-100K	AVC Network
R12	68Ω	½		BW-½-68	1st IF Cathode
R13	1000Ω	½		BTS-1000	1st IF Decoupling
R14	22KΩ	½		BTS-22K	Diode Filter
R15	68Ω	½		BW-½-68	2nd IF Cathode
R16	1000Ω	½		BTS-1000	2nd IF Decoupling
R17	22KΩ	½		BTS-22K	De-emphasis
R18	2.2 Meg.	½		BTS-2.2 Meg	AVC Network
R19	1 Meg.	½		BTS-1 Meg.	AVC Network
R20	100KΩ	½		BTS-100K	AVC Network
R21	33KΩ	½		BTS-33K	Ratio Det. Diode Load
R22	6.8 Meg.	½		BTS-6.8 Meg	AF Grid
R23	330KΩ	½		BTS-330K	AF Plate
R24	220Ω	½		BW-½-220	Output Cathode
R25	100Ω	1		BW-2-100	Filter
R26	22Ω	1			Surge Limiter

TRANSFORMER (OUTPUT)

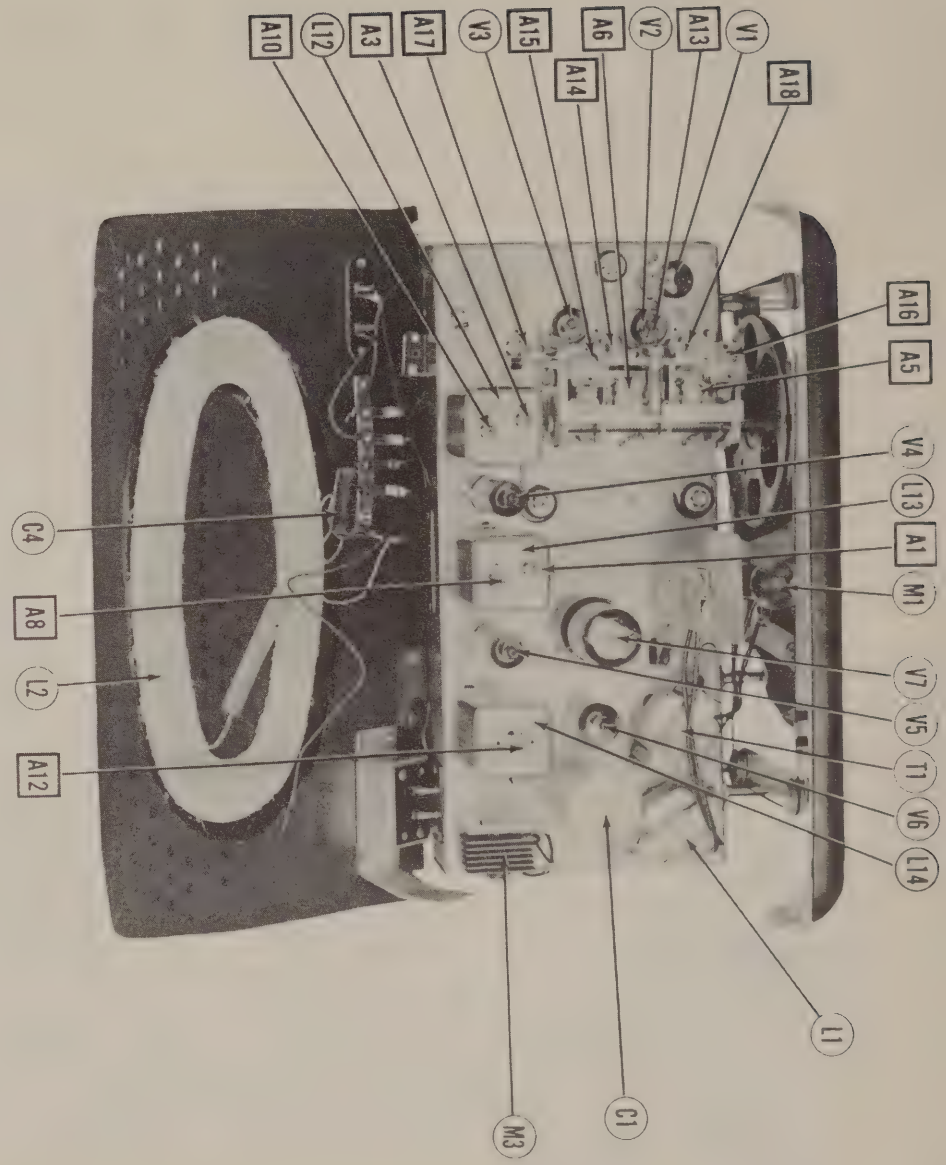
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2600Ω	3.3Ω	108Ω	.3Ω	N21393-2	A-3876	RO-2	A-2928	

SPEAKER

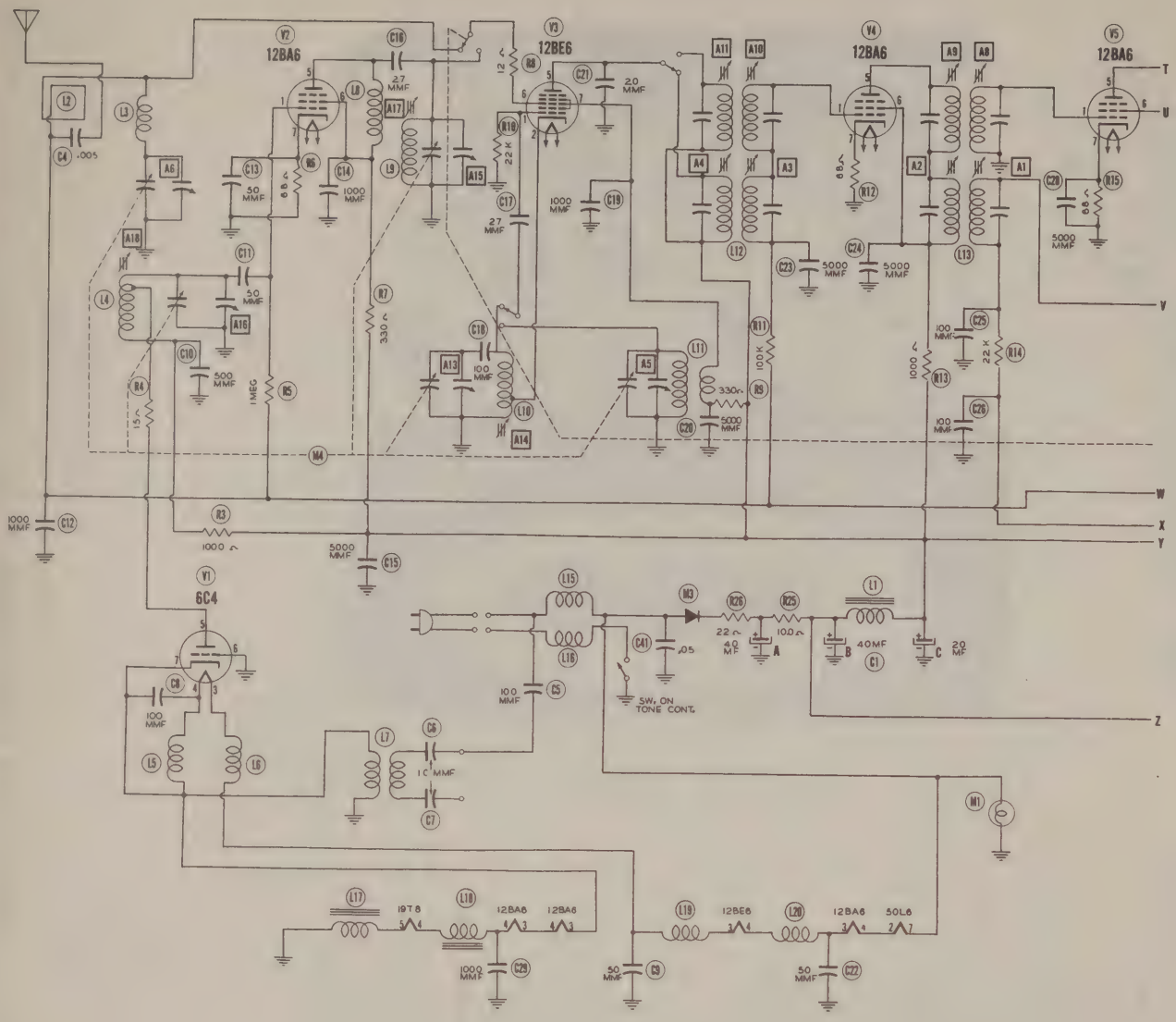
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V.C. IMP.	N21658	ST-803 MUD.P525-X	52A1	
	PM	3.3Ω				
SP2	CONE DIA.	V.C. DIA.				
	5"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SILVERTONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.066A	220Ω	6H	N21344-2	C-1080#		C-2977	# Drill One New Mtg. Hole



DATE 9/49 4918-10 SET #70 FOLDER #10



IF= 455 KC AM

IF=10.7 MC FM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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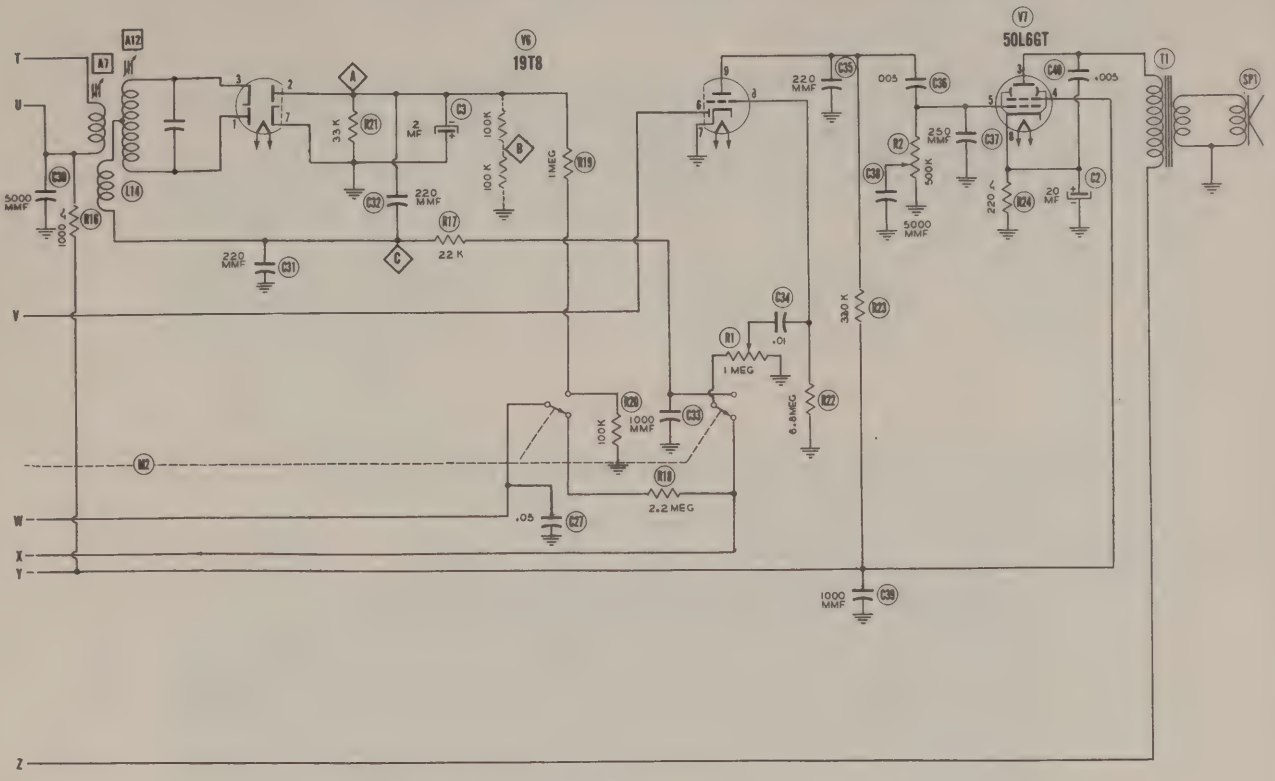

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	6C4	0V	0V	50VAC	43VAC	92VDC	0V	0V		
‡V2	12BA6	0V	0V	43VAC	31VAC	100VDC	100VDC	1VDC		
V 3	12BE6	§-3.5 VDC	0V	48VAC	60VAC	100VDC	100VDC	0Ω		
V 4	12BA6	-.1VDC	0V	60VAC	70VAC	92VDC	92VDC	.7VDC		
‡V5	12BA6	0V	0V	31VAC	19VAC	92VDC	92VDC	.8VDC		
V6A	19T8	-.3VDC	-.9VDC	-.3VDC	19VAC	0V	-.7VDC	0V	-.6VDC	50VDC
V6B	19T8	-.3VDC	-.9VDC	-11VDC	19VAC	0V	-.7VDC	0V	-.6VDC	50VDC
V7	50L6GT	0V	60VAC	115VDC	105VDC	0V	0V	117VAC	39VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
‡V1	6C4	Inf.	Inf.	46Ω	40Ω	†1.2KΩ	0Ω	0Ω		
‡V2	12BA6	1.2 Meg	0Ω	39Ω	30Ω	†600Ω	†600Ω	70Ω		
V 3	12BE6	20KΩ	0Ω	45Ω	55Ω	†600Ω	†600Ω	3 Meg.		
V 4	12BA6	3.2 Meg	0Ω	58Ω	65Ω	†1.4KΩ	†1.4KΩ	70Ω		
‡V5	12BA6	1Ω	0Ω	30Ω	21Ω	†1.4KΩ	†1.4KΩ	70Ω		
V6A	19T8	Inf.	30KΩ	Inf.	20Ω	1Ω	1 Meg.	0Ω	6.8 Meg	†360KΩ
V6B	19T8	1 Meg.	30KΩ	1 Meg.	20Ω	1Ω	Inf.	0Ω	6.8 Meg	†360KΩ
V7	50L6GT	Inf.	65Ω	†230Ω	†340Ω	500KΩ	100KΩ	85Ω	220Ω	

† Measured from Junction of M2 and R26.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not, connect a .1MFD capaciter in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V3). Low side to chassis.	455KC	AM	Tuning gang fully open	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1400KC	"	1400KC	"	A5,A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output. Check calibration at 600KC. If incorrect, bend the plates on the antenna section of the tuning gang, until calibration is correct.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ ± 5% resistors in series from pin 2 of 19T8 (V6) to chassis. The junction of the two resistors is point (B) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V3). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non interference	DC Probe to Point (A) Common to chassis.	A7,A8, A9,A10 A11	Adjust for maximum deflection.
4.	.05MFD	"	"	"	"	DC Probe to Point (C) Common to Point (B).	A12	Adjust for zero reading. A positive and negative reading is obtained on either side of the correct setting. Repeat the adjustment of A7 and A12 to assure accurate alignment of the discriminator transformer.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.	.05MFD	High side to pin 7 (Grid) of 12BE6 (V3). Low side to chassis.	10.7MC (450KC Sweep)	FM	Point on non interference	Vert.Amp. to Point (A) Low side to chassis.	A7,A8, A9,A10 A11	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per Fig 1.
4.	.05MFD	"	"	"	"	Vert.Amp. to Point (C) Low side to chassis.	A12	Reconnect C3. Adjust A12 so crossover point occurs at center of the pattern as per Fig 2. Retouch A7 for maximum amplitude and straightness of cross over lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Two 150Ω carbon res.	Across antenna terminals with 150Ω in each generator lead.	108MC	FM	108MC	DC Probe to Point (A) Common to chassis.	A13	Adjust for maximum deflection.
6.	"	"	88MC	"	88MC	"	A14	Adjust for maximum deflection. Repeat steps 5 and 6.
7.	"	"	105MC	"	105MC	"	A15, A16	Adjust for maximum deflection.
8.	"	"	91MC	"	91MC	"	A17, A18	Adjust for maximum deflection. Repeat steps 7 and 8.

FIG. 1

FIG. 2

PHOTOFACT* Folder

TRUETONE
MODEL D2985

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TRUETONE
MODEL D2985

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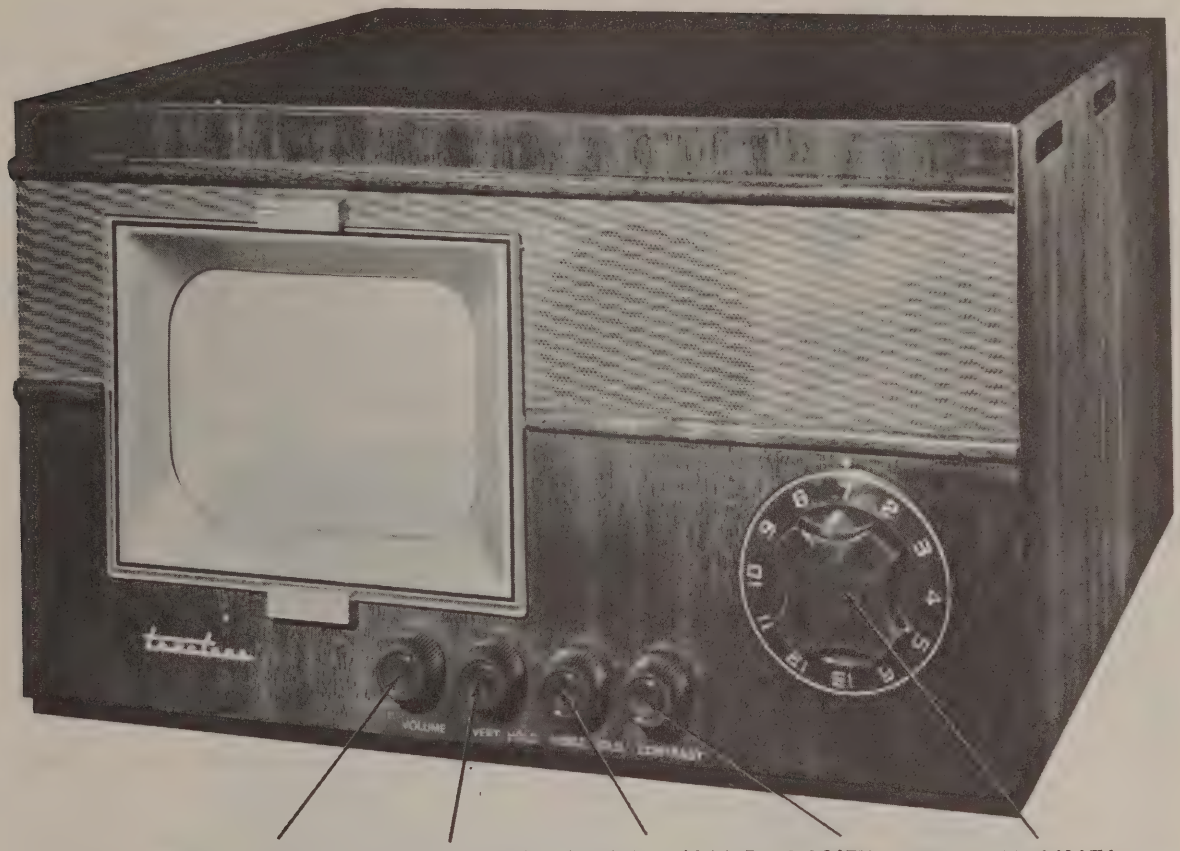

TRUETONE
MODEL D2985

TRUETONE MODEL D2985

TRADE NAME Truetone, Model D2985
MANUFACTURER Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET Television Receiver
TUBES Eighteen

POWER SUPPLY 105-125 Volts AC or DC RATING: .97 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13

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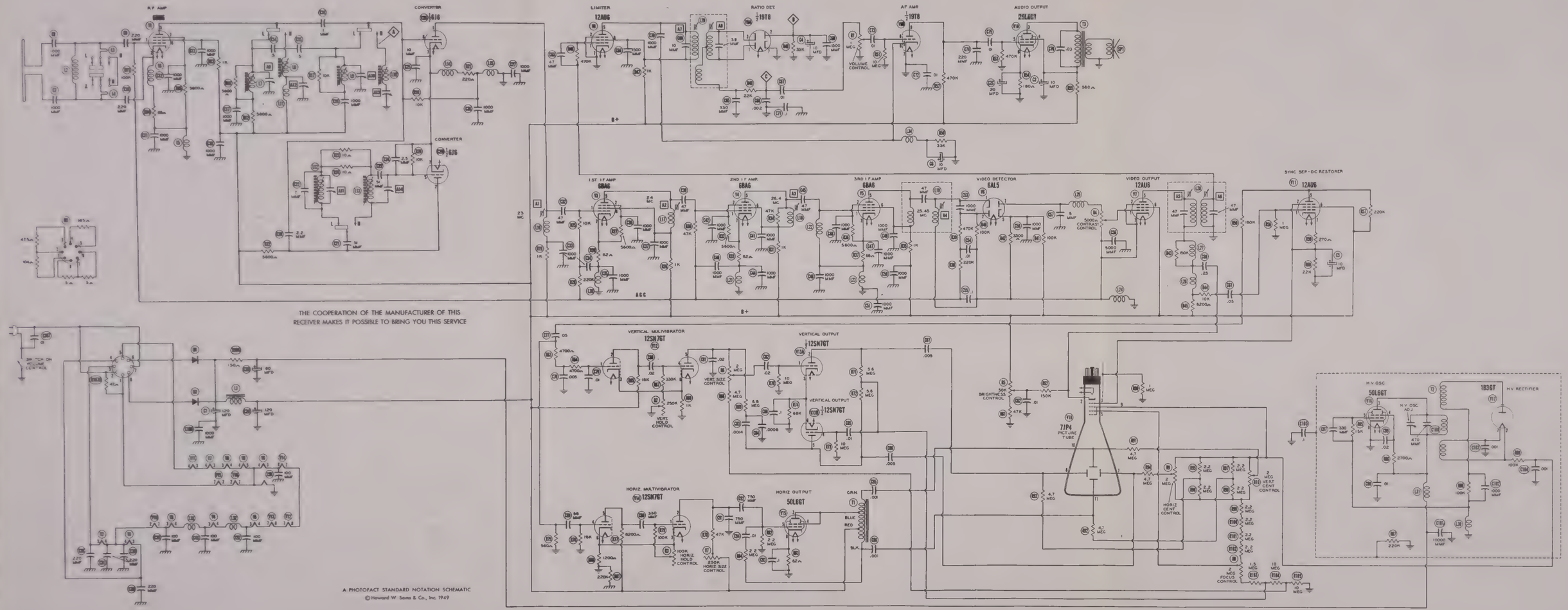
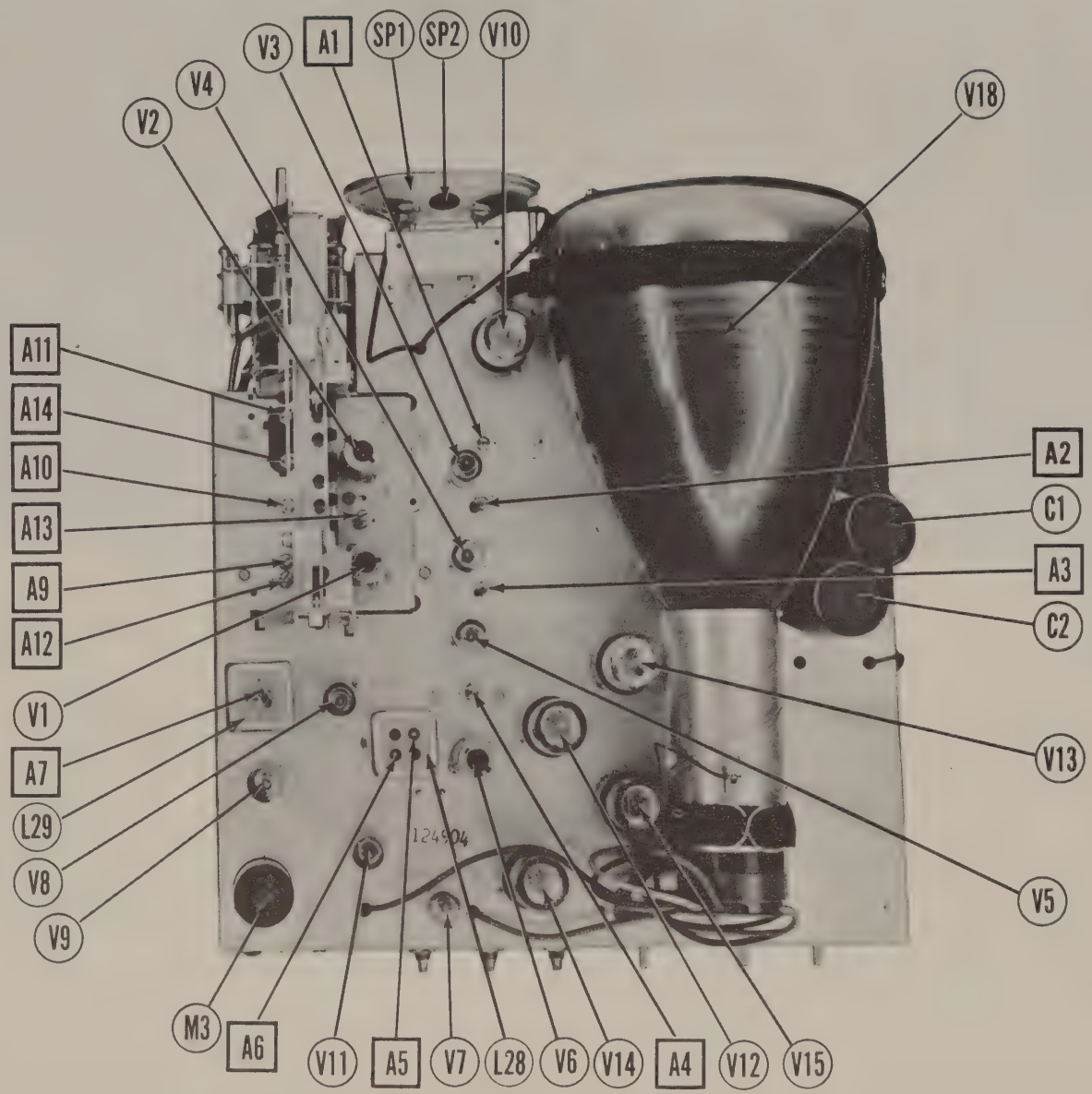
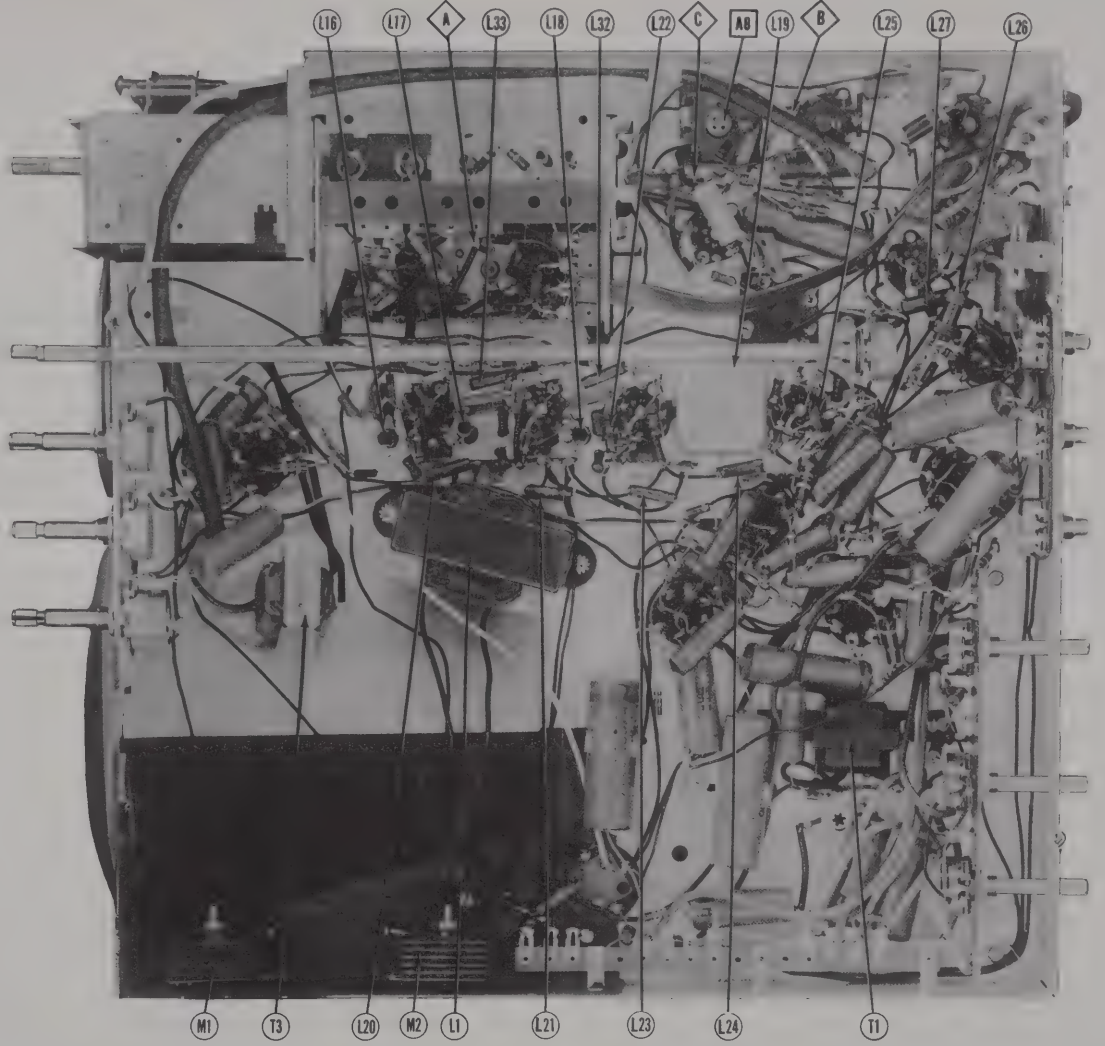


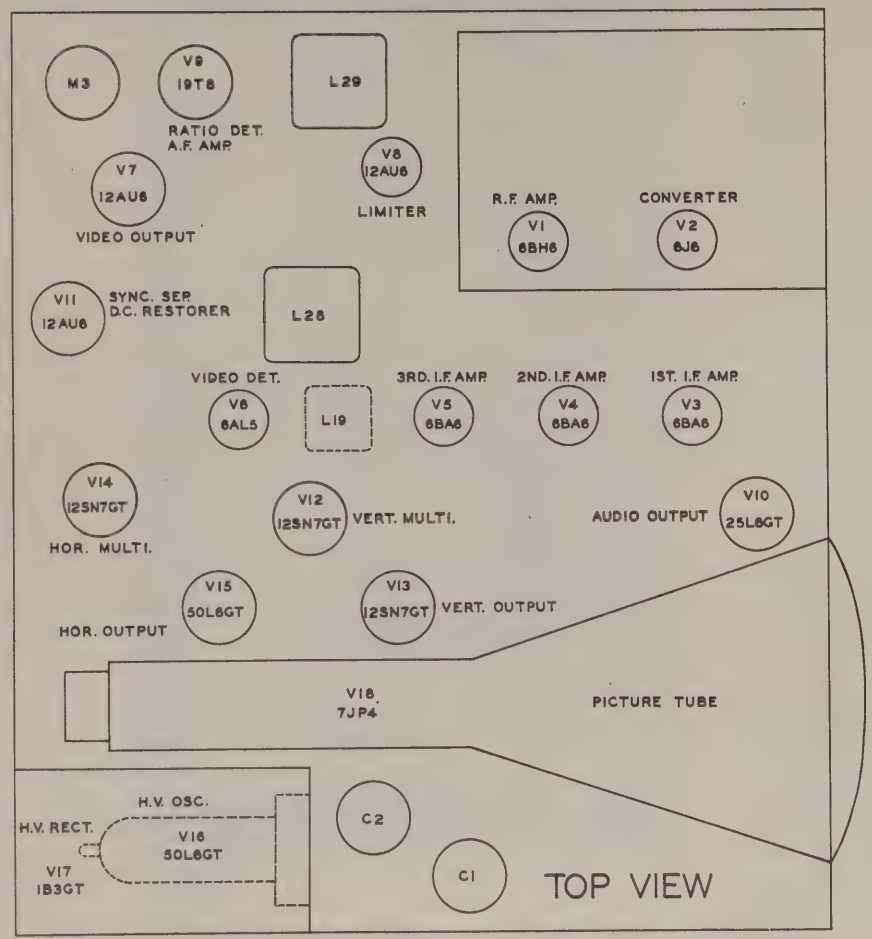
TRUETONE
MODEL D2985

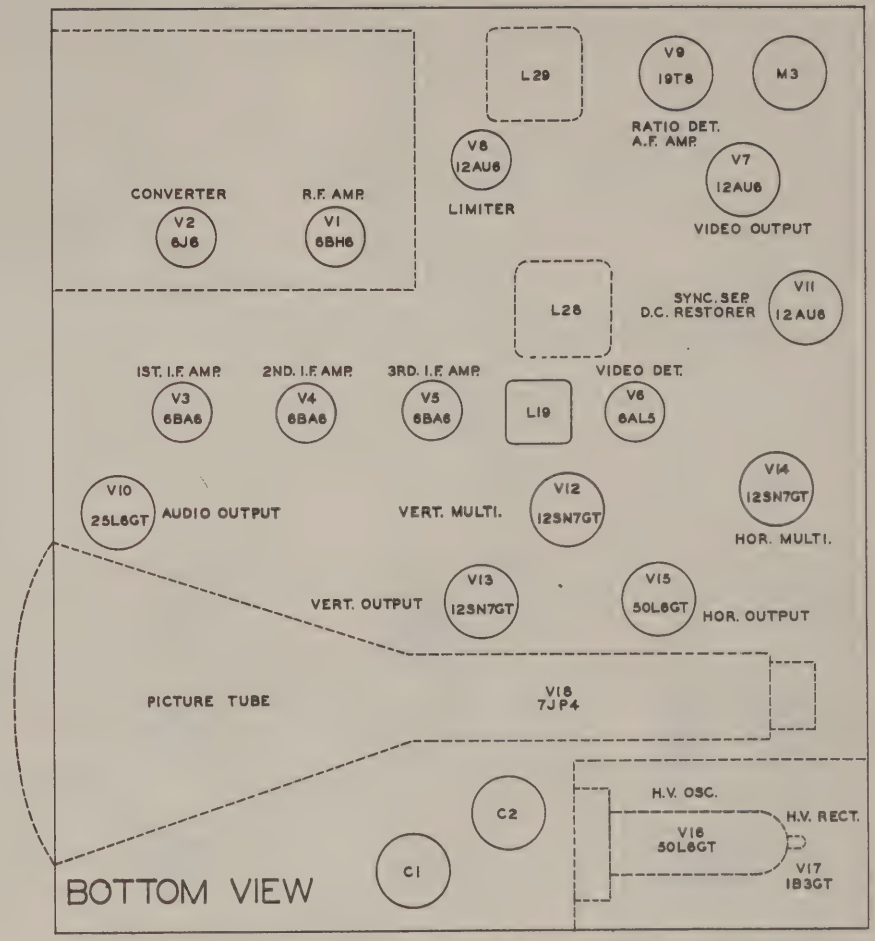


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

PRE- ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Alignment of this receiver may be performed without removal of the picture tube or disabling the high voltage supply. When the receiver is placed on its side, care must be exercised not to damage the picture tube or to come in contact with the high voltage leads.

VIDEO IF ALIGNMENT

Alignment point A, where the IF signal is injected is accessible thru the large hole in the tuner shield on the underside of the tuner.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	47MMF	High side thru 47MMF to Point A. Low side to chassis.	23.0MC	9	Across contrast control (R4)	A1	Adjust for maximum deflection.
2.	47MMF	"	24.0MC	"	"	A2	"
3.	47MMF	"	26.4MC	"	"	A3	"
4.	47MMF	"	25.45MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	47MMF	High side to Point A. Low side to chassis.	24MC (10MC Sweep)	26.75MC 22.25MC	9	Across contrast control (R4) with 10KΩ in series with Vert. Amp. lead. Shunt vertical input terminals with .001MFD capacitor.		If necessary, slightly retouch A1, A2, A3, A4 for proper response curve and placement of markers as per Fig 1.

SOUND IF ALIGNMENT

Short the antenna leads during alignment of the ratio detector circuit so extraneous noise pulses will not give erratic indications on the oscilloscope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	Across contrast control (Control fully on)	4.5MC (1MC Sweep)	4.5MC	9	Vert. Amp. to Point (B) Low side to B-.	A5,A6	Disconnect stabilizer cap (C4). Adjust for maximum amplitude and symmetry as per Fig 2.
7.	.01MFD	"	"	"	"	Vert. Amp. to Point (C) Low side to B-.	A7,A8	Reconnect stabilizer cap. Adjust A7 so 4.5MC marker is at center of pattern as per Fig 3. Adjust A8 for maximum amplitude and straightness of diagonal line.

TUNER ALIGNMENT

Pre-set the tuner cores and trimmers as indicated in figures 4 and 5 before attempting alignment of the tuner. If Fig.5, the dimensions given are the distance from the screw head shoulder to chassis.

When making the adjustments of the station selector screws do not force the screw at any time. The "in" position is reached when the black shuttle bar holding the core slugs reaches the top limit of its travel. It is possible to force the screw in farther than this point but this results in jamming the tuner.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 125Ω carbon res.	Across antenna terminals with 125Ω resistor in each generator lead.	Approx. 85MC (10MC Sweep)	Off	6	Across contrast control (R4) with 10KΩ in Vert. Amp. lead. Shunt vert. input terminals with .001MMF capacitor.	A9,A10	Turn channel 6 station selector screw 1 full turn from its maximum "in" position. Adjust A9 and A10 for maximum amplitude and symmetry as per Fig 6.
9.	"	"	"	83.25MC	"	"	A11	Adjust A11 so marker is 50% down on the low frequency slope on curve. If necessary, repeat step 8.
10.	"	"	Approx. 79MC (10MC Sweep) Approx. 69MC (10MC Sweep) Approx. 63MC (10MC Sweep)	77.25MC 67.25MC 61.25MC	5 4 3	"		Check the response on all low band channels. It may be necessary to forfeit some of the response on one channel to improve that of another by slight retouching of A9 and A10.
11.	"	"	Approx. 57MC (10MC Sweep)	55.25MC	2	"		If it is possible to move video marker to 50% point on the curve by the station-selector screw (with screw at least 2 turns from its maximum "out" position) the low band is properly aligned.

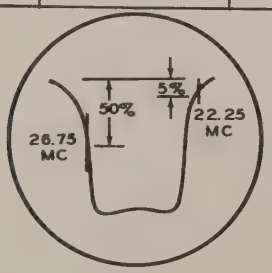


FIG. 1

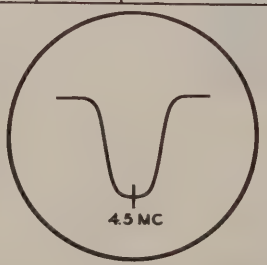


FIG. 2

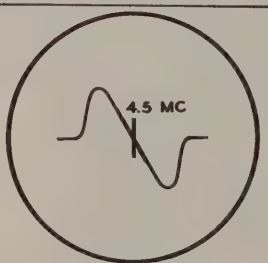


FIG. 3

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	"	"	Approx. 213MC (10MC Sweep)	Off	13	"	A12, A13	Turn channel 13 station selector screw 3/4 turn from it maximum "in" position. Adjust A12 and A13 for maximum amplitude and symmetry as per Fig 6.
13.	"	"	"	211.25MC	"	"	A14	Adjust A14 so marker is 50% down on the low frequency slope on curve. If necessary, repeat step 12.
14.	"	"	Approx. 207MC (10MC Sweep) Approx. 201MC (10MC Sweep) Approx. 195MC (10MC Sweep) Approx. 189MC (10MC Sweep) Approx. 183MC (10MC Sweep)	205.25MC 199.25MC 193.25MC 187.25MC 181.25MC	12 11 10 9 8	"		Check response on all high band channels. If necessary, retouch A12 and A13 for compromise to give best overall response curve.
15.	"	"	Approx. 177MC (10MC Sweep)	175.25MC	7	"		If it is possible to move video carrier marker to 50% point on response curve by adjustment of channel 7 station-selector screw (screw at least one full turn in from its maximum "out" position), the high band is properly aligned.

TO ADJUST TUNING SLUGS —

1 - Push arm indicated to the right with respect to the picture and hold firmly against STOP while making adjustment.

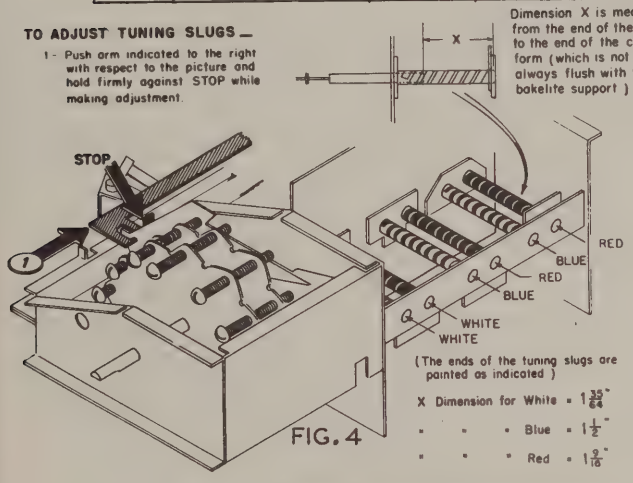

STOP
X
Dimension X is measured from the end of the slug to the end of the coil form (which is not always flush with the bakelite support)
RED
BLUE
RED
BLUE
WHITE
WHITE
(The ends of the tuning slugs are painted as indicated)
X Dimension for White = 1 35/64"
" " " Blue = 1 1/2"
" " " Red = 1 9/16"

FIG. 4

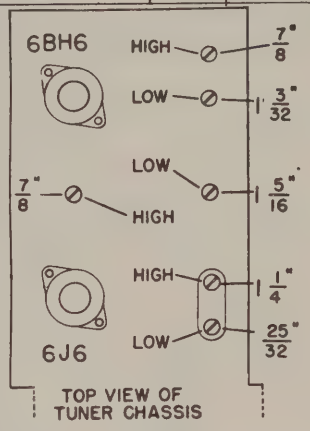


FIG. 5

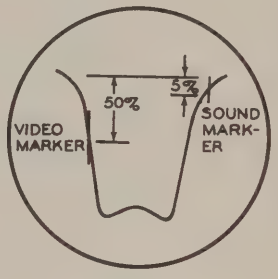
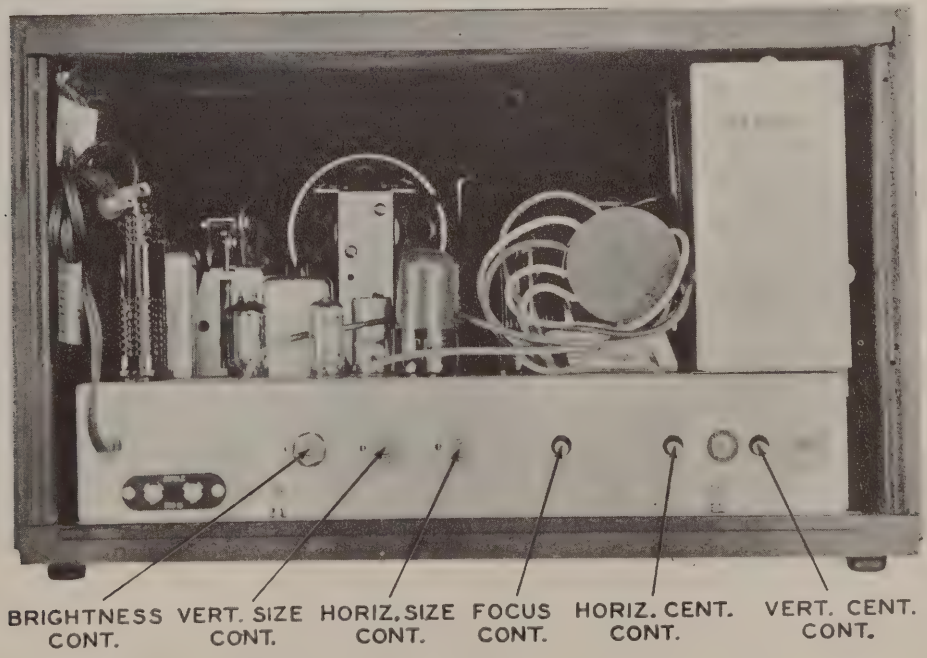


FIG. 6



CABINET-REAR VIEW

TRUETONE MODEL D2985

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	-.1VDC	.4VDC	85VAC	90VAC	100VDC	125VDC	0V		
V 2	6J6	125VDC	85VDC	95VAC	90VAC	§1.5 VDC	0V	2VDC		
V 3	6BA6	-.1VDC	1.1VDC	65VAC	58VAC	115VDC	115VDC	1.1VDC		
V 4	6BA6	-.1VDC	1.1VDC	58VAC	50VAC	115VDC	115VDC	1.1VDC		
V 5	6BA6	0V	1.7VDC	50VAC	45VAC	115VDC	115VDC	1.7VDC		
V 6	6AL5	0V	0V	12VAC	6VAC	4.2VDC	0V	-4VDC		
V 7	12AU6	0V	0V	35VAC	45VAC	40VDC	125VDC	0V		
V 8	12AU6	-.4VDC	0V	35VAC	24VAC	115VDC	115VDC	0V		
V 9	19T8	-.4VDC	-.6VDC	-.4VDC	24VAC	6VAC	-.6VDC	0V	-.4VDC	43VDC
V 10	25L6GT	0V	90VAC	93VDC	100VDC	0V	0V	65VAC	8VDC	
V 11	12AU6	0V	4.5VDC	45VAC	55VAC	87VDC	125VDC	4.5VDC		
V 12	12SN7GT	0V	80VDC	2.5VDC	2.5VDC	31VDC	2.5VDC	36VAC	24VAC	
V 13	12SN7GT	0V	295VDC	16VDC	0V	265VDC	16VDC	45VAC	36VAC	
V 14	12SN7GT	-1VDC	30VDC 65VDC	4.2VDC	0V	105VDC	4.2VDC	24VAC	12VAC	
V 15	50L6GT	0V	60VAC	125VDC	125VDC	-9.2VDC	0V	110VAC	1VDC	
V 16	50L6GT	0V	60VAC	130VDC	100VDC	-13.5 VDC	0V	6VAC	0V	
V 17	1B3GT	* DO NOT MEASURE								

PINS	1	2	3	4	5	6	7	8	9	10	11	14
V18 7JP4	6VAC	120VDC	4.5VDC	0V	*	0V	*	*	*	*	*	0V

* Do Not Measure.

§TAKEN WITH VACUUM TUBE VOLTMETER

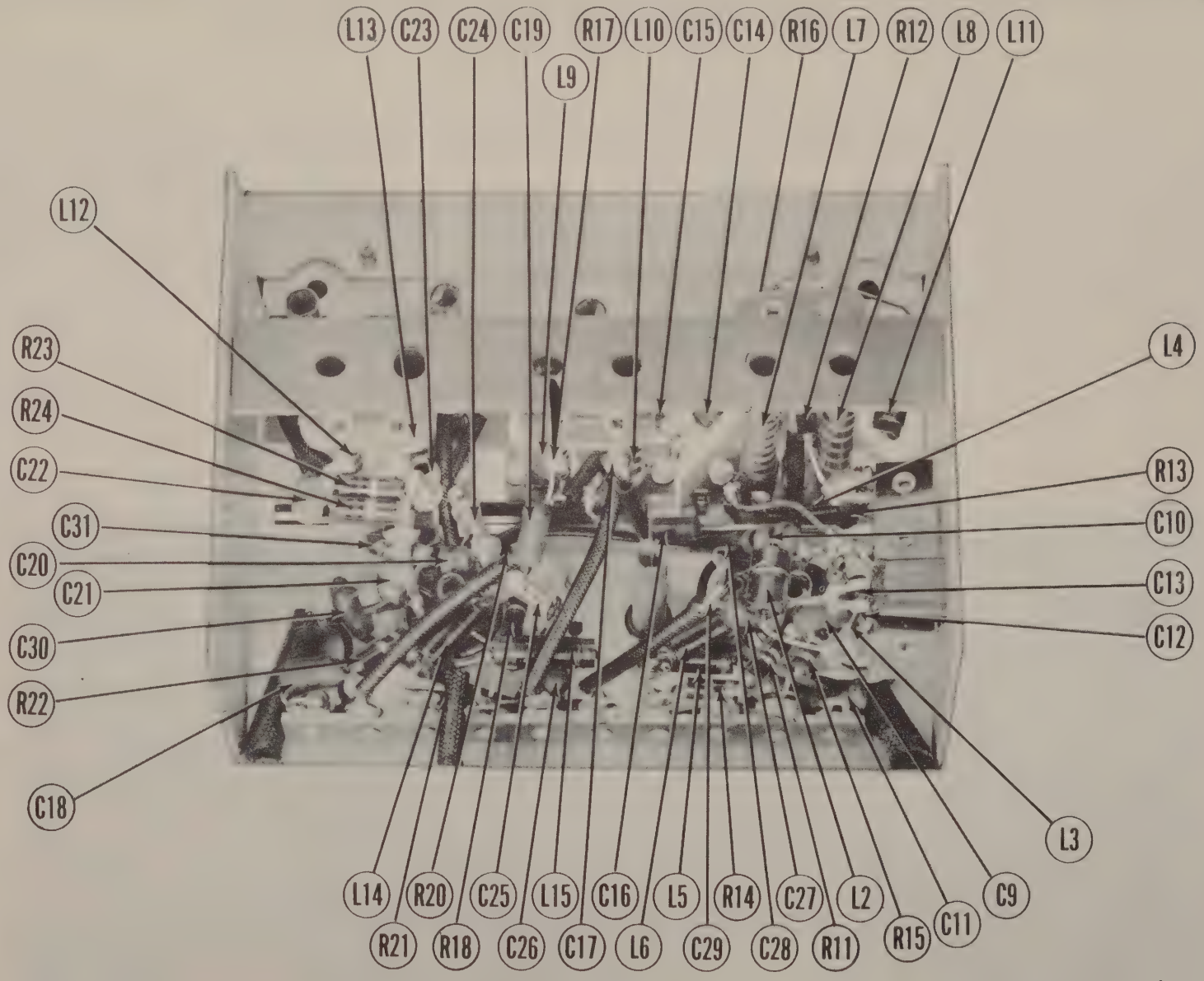
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BH6	900KΩ	68Ω	42Ω	38Ω	†5.5KΩ	†1000Ω	5.6KΩ		
V 2	6J6	†1000Ω	†5.5KΩ	39Ω	38Ω	10KΩ	10KΩ	220Ω		
V 3	6BA6	1 Meg.	5.6KΩ	33Ω	31Ω	†1000Ω	†1000Ω	82Ω		
V 4	6BA6	850KΩ	5.6KΩ	30Ω	28Ω	†1000Ω	†1000Ω	82Ω		
V 5	6BA6	3Ω	5.6KΩ	27Ω	24Ω	†1000Ω	†1000Ω	82Ω		
V 6	6AL5	1.5Ω	100KΩ	4.5Ω	1.5Ω	3.3KΩ	Inf.	5KΩ		
V 7	12AU6	7Ω	1.5Ω	28Ω	36Ω	†8.2KΩ	†63Ω	1.5Ω		
V 8	12AU6	470KΩ	0Ω	28Ω	19Ω	†1000Ω	†1000Ω	0Ω		
V 9	19T8	Inf.	33KΩ	Inf.	19Ω	1.5Ω	33KΩ	0Ω	10 Meg.	†470KΩ
V 10	25L6GT	Inf.	37Ω	†800Ω	†620Ω	470KΩ	0Ω	33Ω	180Ω	
V 11	12AU6	1 Meg.	22KΩ	36Ω	44Ω	†220KΩ	†63Ω	22.2KΩ		
V 12	12SN7GT	10KΩ	†18KΩ	1000Ω	350KΩ	17 Meg.	1000Ω	20Ω	13Ω	
V 13	12SN7GT	10 Meg.	25.6 Meg.	68KΩ	10 Meg.	25 -6 Meg.	68KΩ	24Ω	20Ω	
V 14	12SN7GT	100KΩ	†300KΩ †50KΩ	1.2KΩ	18KΩ	†8.2KΩ	1.2KΩ	13Ω	4.5Ω	
V 15	50L6GT	Inf.	40Ω	†100Ω	†100Ω	2.2 Meg	0Ω	58Ω	62Ω	
V 16	50L6GT	Inf.	40Ω	†150Ω	†2.7KΩ	15KΩ	Inf.	1.5Ω	0Ω	
V 17	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 100KΩ

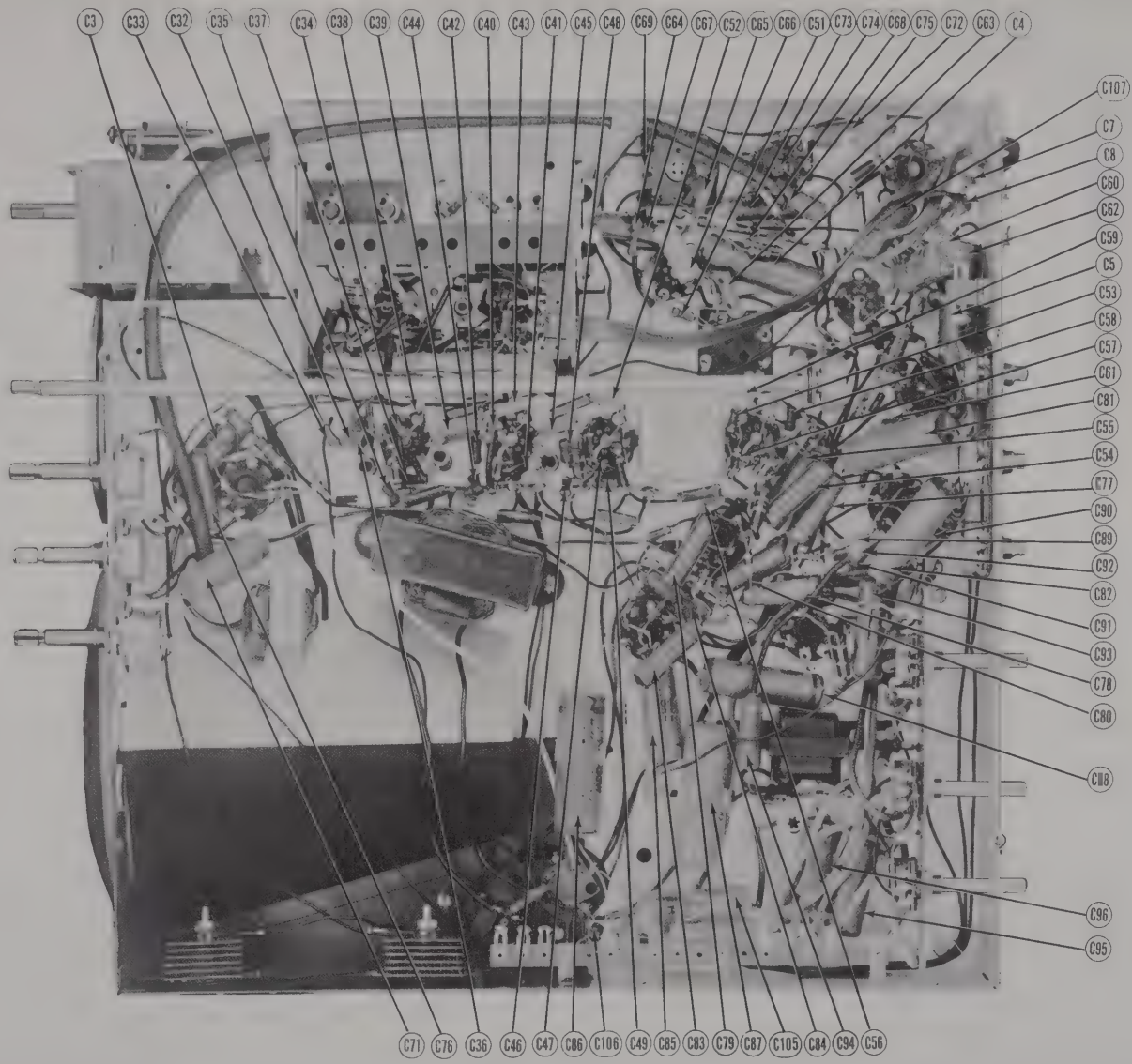
PINS	1	2	3	4	5	6	7	8	9	10	11	14
V18 7JP4	1.5Ω	†180KΩ	22KΩ	Inf.	25 Meg.	Inf.	40 Meg.	40 Meg.	35 Meg	42 Meg 40 Meg	40 Meg	0Ω

† Measured From Output Of M1.

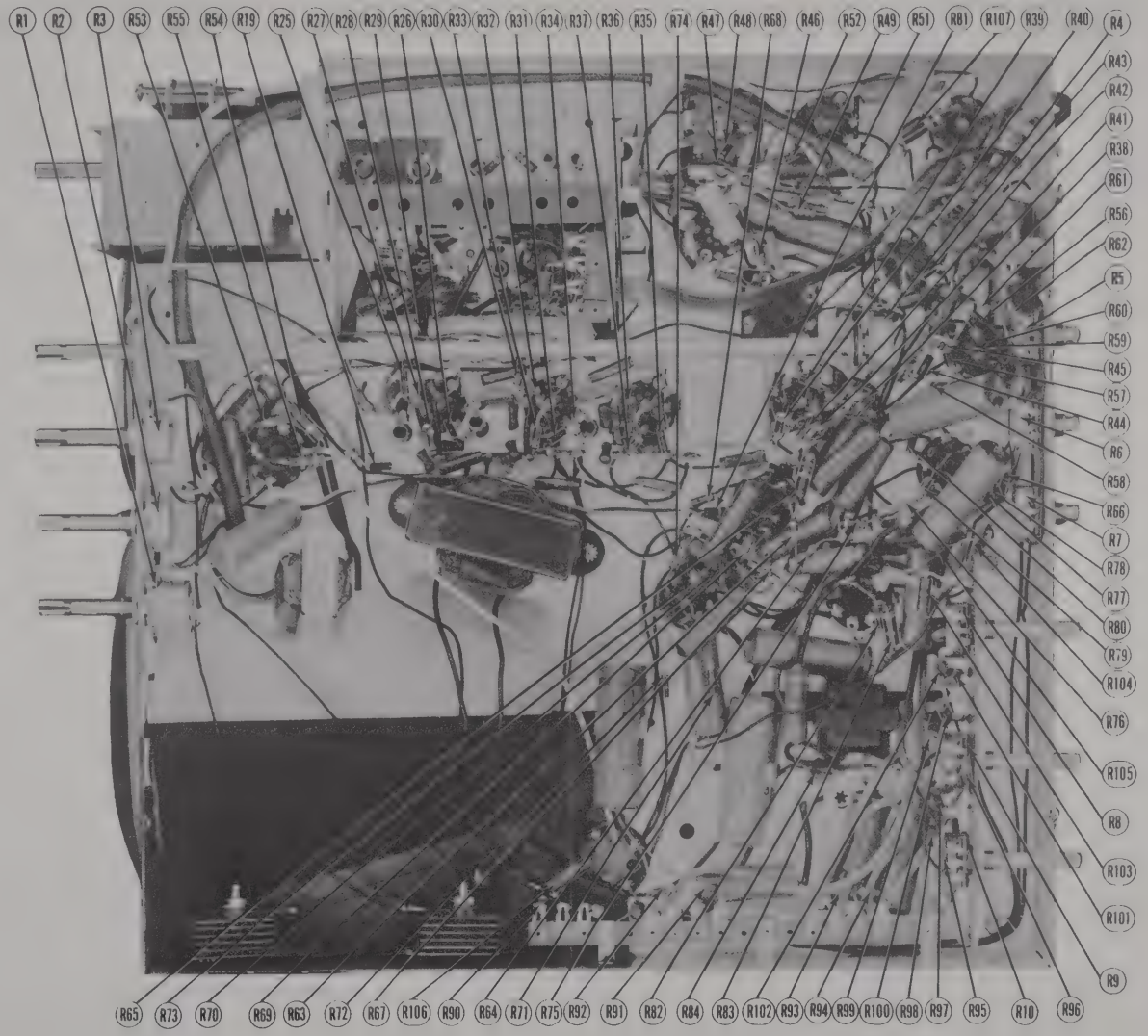
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BH6	6BH6	7GM	
V2	Converter	6A8	6A8	7BF	
V3	1st IF Amp.	6BA6	6BA6	7BK	
V4	2nd IF Amp.	6BA6	6BA6	7BK	
V5	3rd IF Amp.	6BA6	6BA6	7BK	
V6	Detector	6AL5	6AL5	6HT	
V7	Video Output	12AV6	12AV6	7BK	
V8	Limiter	12AU6	12AU6	7BK	
V9	Ratio Det.-AF Amp.	1N78	1N78	9E	
V10	Audio Output	2S.6.6T	2S.6.6T	7AC	
V11	Sync. Sep.-DC Rest.	12AU6	12AU6	7BK	
V12	Vert. Multi-vibrator	12SN7GT	12SN7GT	8BD	
V13	Vert. Output	12SN7GT	12SN7GT	8BD	
V14	Hor. Multi-vibrator	12SN7GT	12SN7GT	8BD	
V15	Hor. Output	2S.6.6T	2S.6.6T	7AC	
V16	HV Osc.	2S.6.6T	2S.6.6T	7AC	
V17	HV Rectifier	1X2CT	1X2CT	1AU	
V18	Picture Tube	21FP4	21FP4	14D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	150	150	B-8P-15664	AFH24D			TVL-44	Filter
C1A	150	150	B-8C-15948	AFH2412D4A	UP 555150*			* Filter
B	80	150						■ Filter
C	80	150					UT-121	Output Cathode Bypass
C2	10	150	A-8C-11495	PRS150/12	BR1015		UT-121	Output Decoupling
C4	50	50	A-8C-13132	PRS50/10	BR105		TVA-14	Stabilizing Cap
C5	50	50	A-8C-13132	PRS50/10	BR105		TVA-14	V. Amp. Cath. Bypass
C6	150	150	A-8C-11495	PRS150/12	BR1015		UT-121	Dyn. Limiter Cath. *
C7	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	Ant. Coupling
C8	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	Ant. Coupling
C9	.1		C-8G-16045			GP2K-200		RF Coupling
C11	.1		C-8G-16045			GP2K-200		RF Coupling
C12	.5		C-8G-13201			GP2L-001		RF Bypass
C13	.1		C-8G-13201			GP2L-001		RF Bypass
C14	.5		A-8G-12495 -7					RF Coupling
C15	.5		A-8G-12495 -7					RF Coupling
C16	1		A-8G-12495 -8					RF Coupling
C17	.1000		C-8G-13201			GP2L-001		RF Plate Dec.
C18	.1		C-8G-13201			GP2L-001		RF Bypass
C19	.1000		C-8G-13201			GP2L-001		RF Bypass
C20	2.2		A-8G-12495 -4					Osc. Coupling
C21	51		C-8G-11891					Osc. Feedback
C22	8		C-8G-15824					Fixed Trimmer
C23	51		C-8G-11891					Osc. Grid Cap
C24	4.5		C-8G-15737					Osc. Feedback
C25	10		C-8G-11789			NPOK-10		Osc. Feedback
C26	.1000		C-8G-13201			GP2L-001		RF Bypass
C27	.1000		C-8G-13201			GP2L-001		RF Bypass
C28	.1		C-8G-16045			GP2K-200		RF Fil. Bypass
C29	.1		C-8G-16045			GP2K-200		RF Fil. Bypass
C30	.1		C-8G-16045			GP2K-200		Conv. Fil. Bypass
C31	220		C-8G-16045			GP2K-200		Conv. Fil. Bypass
C32	47	500	C-8F3-109	1468-00005	5W5J5	GP1K-50	1FM-45	IF Coupling
C33	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	Conv. Plate Dec.
C34	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C35	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C36	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	1st IF Supp. Bypass
C37	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	1st IF Decoupling
C38	.1		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	1st IF Fil. Bypass
C39	47	500	C-8F3-109	1468-00005	5W5J5	GP1K-50	1FM-45	IF Coupling
C40	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	AGC Filter
C41	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	2nd IF Decoupling
C42	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	2nd IF Supp. Bypass
C43	.100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	2nd IF Fil. Bypass
C44	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C45	47	500	C-8F3-109	1468-00005	5W5J5	GP1K-50	1FM-45	IF Coupling
C46	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C47	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	3rd IF Cath. Bypass
C48	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	3rd IF Supp. Bypass
C49	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	3rd IF Decoupling
C50	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C51	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C52	.100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	3rd IF Fil. Bypass
C53	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	IF Coupling
C54	.01	200	C-8D-11738	P488-01		GT2S1	TM-11	AGC Filter
C55	.1	200	C-8D-10771	P288-1		GT2P1	TM-1	AGC Filter
C56	5000		A-8G-13962	1467-005	1D5D5	GP2M-005	1FM-25	RF Bypass
C57	5		C-8G-12166	1468-000005	5W5V5	NPOK-5	MS-55	V Diode Filter
C58	.1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	DADG Decoupling
C59	.100		C-8G-11734	1468-0001	5W5T1	GP1K-100	1FM-31	V DET-AGC Fil. Bypass
C60	.25	200	C-8D-10775	P488-25	GT2P25		TC-2	Video Coupling
C61	.05	200	C-8D-10770	P288-05	GT2S5		TM-15	Video Coupling
C62	.01	200	C-8D-11738	P488-01	GT2S1	GP2-335-01	TM-11	Pic Tube Cath. Dec.
C63	47	500	C-8F3-109	1468-00005	5W5J5	GP1K-50	1FM-45	S. IF Coupling
C64	.1500		C-8G-11731	1467-0015	1W5D15	GP2L-0015	1FM-215	S. IF Decoupling
C65	330	500	C-8F3-119	1468-0003	5W5T3	GP2K-300	1FM-335	Diode Load Cap
C66	.002	600	C-8D-10778	P688-002	GT6D2	GP2M-002	TM-22	De-emphasis
C67	.01	200	C-8D-11738	P488-01	GT2S1	GP2-335-01	TM-11	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C68	1500		C-8G-11731	1467-0015	1W5D15	GP2L-0015	1FM-215	RF Bypass
C69	10			1469-00001	5R5Q1	NPOK-10	MS-41	Fixed Trimmer *
C70	2000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	S. IF Coupling *
C71	.1	400	C-8D-10760	P488-1		GT4F1	TM-1	Line Isolation
C72	.01	200	C-8D-11738	P488-01		GT2S1	GP2-335-01	TM-11 Line Isolation
C73	.01	200	C-8D-11738	P488-01		GT2S1	GP2-335-01	TM-11 Audio Coupling
C74	220		C-8G-11753	1468-00025	1W5T25	GP2K-250	1FM-325	AF Plate Bypass
C75	.01	200	C-8D-11738	P488-01		GT2S1	GP2-335-01	TM-11 Audio Coupling
C76	.05	200	C-8D-10992	P488-03		GT4S3		TM-13 Output Plate Bypass
C77	.05	200	C-8D-10770	P288-05		GT2S5		TM-15 Sync. Coupling
C78	.005	600	C-8D-10935	P688-005		GT6S6	GP2M-005	TM-25 Integrator Net
C79	.01	200	C-8D-11738	P488-01		GT6S1	GP2-335-01	TM-11 Integrator Net
C80	.05	200	C-8D-11304	P488-02		GT2S2		TM-12 Vert. Mult. Feedback
C81	.02	1600		P1688-02		GT16S2		MB-12 Vert. Discharge
C82	.02	1600		P1688-02		GT16S2		MB-12 Vert. Coupling
C83	.0014	1600		P1688-0015				Voltage Divider
C84	.0018	1600						Voltage Divider
C85	.01	1600	B-8D-13693	P1688-01		GT16S1		MB-11 Vert. Coupling
C86	.005	6000	B-8D-13549	7584-005 -60D5		D5TH		TVM-256 Vert. Coupling
C87	.005	6000	B-8D-13549	7584-005 -60D5		D5TH		TVM-256 Vert. Coupling
C88	.1	600	C-8D-10983	P638-1		GT6P1	TM-1	Vert. Output Cath. Byp.
C89	68	500	C-8F3-111					Hor. Sync. Coupling
C90	330	500	C-8F3-119					Hor. Mult. Feedback
C91	750	500	C-8F3-246	1469-00075				Hor. Discharge
C92	750	500	C-8F3-246	1469-00075				Hor. Coupling
C93	.1	200	C-8D-10771	P288-1		GT2P1	TM-1	Hor. Screen Byp. Cath. Byp.
C94	.01	200	C-8D-11738	P488-01		GT2S1	GP2-335-01	TM-11 Hor. Feedback
C95	.001	6000	B-8D-13523	7584-001 -60D1		D5TH		TVM-216 Hor. Coupling
C96	.001	6000	B-8D-13523	7584-001 -60D1		D5TH		TVM-216 Hor. Coupling
C97	330	500	C-8F3-119					HV Osc. Grid Cap
C98	.01	200	C-8D-11738	P488-01		GT2S1	GP2-335-01	TM-11 HV Osc. Decoupling
C99	.02	200	C-8D-11304	P488-02		GT2S2		TM-12 HV Screen Byp.
C100	470	500	C-8F3-121	1469-0005		5R5T5	MS-35	Fixed Trimmer
C101	10000		A-8G-16019	P488-01		GT4S1	GP2-335-01	TM-11 RF Bypass
C102	.01	200	C-8D-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C103	.001	6000	B-8D-13523				TVM-216	HV Filter
C104	.001	6000	B-8D-13523				TVM-216	HV Filter
C105	.1	400	C-8D-10760	P488-1		GT4P1	TM-1	HV Power Supply Isol.
C106	1000		C-8G-13201	1468-001	1W5D1	GP2L-001	1FM-21	RF Bypass
C107	.01	200	C-8D-11738	P488-01		GT2S1	GP2-335-01	TM-11 Line Filter

* Not Used In All Models.
† Parallel Sections To Obtain Desired Capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	A-10A15666	Q13-137	AM-63-2	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R1A Per Instructions
C	Switch		Not Req.	76-1	SW-A	Attach to R1A Per Instructions
R2A	250KΩ	½	B-10B15671	Q11-130	AM-55-S	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R2A Per Instructions
R3A	100KΩ	½	B-10B15670	Q11-128	AM-42-S	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	Attach to R3A Per Instructions
R4A	500Ω	½	A-10B15272	Q11-114	AM-16-S	Contrast Control
B	Shaft		Not Req.	GQ	DFS-¼	Attach to R4A Per Instructions
R5	50KΩ	½	A-10B15672	Q11-123	M-44-S	Brightness Control
R6	2 Meg.	½	A-10B15850	Q11-139	M-63-S	Vert. Size Control
R7	250KΩ	½	A-10B15614	Q11-130	M-55-S	Horiz. Size Control
R8	2 Meg.	½	B-10B15627			Focus Control
R9	2 Meg.	½	B-10B15627			Horiz. Centering Control
R10	2 Meg.	½	B-10B15627			Vert. Centering Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
R11	100KΩ	½	C-9B1-86		RF Grid
R12	56000Ω	½	C-98L-71		RF Plate
R13	10000Ω	½	C-9B1-13		RF Screen Decoupling 20%
R14	68Ω	½	C-9B1-48		RF Cathode
R15	56000Ω	½	C-9B1-71		RF Suppressor Grid
R16	56000Ω	½	C-9B1-71		RF Coil Shunt
R17	10KΩ	½	C-9B1-74		Mixer Grid Coil Shunt
R18	10KΩ	½	C-9B1-74		Mixer Grid
R19	10000Ω	½	C-9B1-13		Mixer Plate Decoup. 20%
R20	10KΩ	½	C-9B1-74		Osc. Grid
R21	220Ω	½	C-9B1-54		Osc. Cathode
R22	56000Ω	½	C-9B1-71		Osc. Plate
R23	10Ω	½	C-98L-38		Parasitic Supp.
R24	10Ω	½	C-9B1-38		Parasitic Supp.
R25	10KΩ	½	C-9B1-19		1st IF Grid 20%
R26	10000Ω	½	C-9B1-13		1st IF Decoup.
R27	56000Ω	½	C-9B1-71		1st IF Suppressor Grid
R28	68Ω	½	C-9B1-133		1st IF Cathode 5%
R29	220KΩ	½	C-9B1-27	BTS-220K	AGC Network 20%
R30	47KΩ	½	C-9B1-82		2nd IF Grid
R31	10000Ω	½	C-9B1-13		2nd IF Decoup. 20%
R32	56000Ω	½	C-9B1-71	BTS-5600	2nd IF Suppressor Grid
R33	82Ω		C-9B1-133		2nd IF Cathode 5%
R34	47KΩ	½	C-9B1-82		2nd IF Transformer Shunt
R35	10000Ω	½	C-9B1-13		3rd IF Decoup. 20%
R36	56000Ω	½	C-9B1-71		3rd IF Suppressor Grid
R37	68Ω	½	C-9B1-131		3rd IF Cathode 5%
R38	220KΩ	½	C-9B1-27	BTS-220K	AGC Network
R39	470KΩ	½	C-9B1-94	BTS-470K	AGC Network
R40	100KΩ	½	C-9B1-86	BTS-100K	AGC Diode Load

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R41	100KΩ	½	C-9B1-86	BTS-100K	Voltage Divider
R42	3300Ω	½	C-9B1-68	BTS-3300	Voltage Divider
R43	150Ω	½	C-9B1-26	BTS-150K	Peaking Coil Shunt 20%
R44	1MΩ	½	C-9B1-19	BTS-1M	Phase Correction 20%
R45	8200Ω	½	C-9B1-73	BTS-8200	Video Output Plate
R46	470KΩ	½	C-9B1-94		Limiter Grid
R47	10000Ω	½	C-9B1-13		Limiter Decoup.
R48	22KΩ	½	C-9B1-78	BTS-22K	De-emphasis
R49	33KΩ	½	C-9B1-80	BTS-33K	Disc. Diode Load
R50	33KΩ	½	C-9B1-80	BTS-33K	Limiter Diode Load See Note 1
R51	1. Meg.	½	C-9B1-37	BTS-1 Meg.	AF Grid
R52	470KΩ	½	C-9B1-94	BTS-470K	AF Plate
R53	470KΩ	½	C-9B1-94	BTS-470K	Output Grid
R54	180Ω	1	C-9B2-53	BW-1-180	Output Cathode
R55	560Ω	2	C-9B2-59	BW-1-560	Filter
R56	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Sync. Sep. Grid 20%
R57	220KΩ	½	C-9B1-27	BTS-220K	Sync. Sep. Plate 20%
R58	180KΩ	½	C-9B1-89	BTS-180K	Sync. Coupling Network
R59	270Ω	½	C-9B1-55	BW-½-270	Sync. Sep. Cathode
R60	22KΩ	½	C-9B1-78	BTS-22K	Sync. Sep. Cathode
R61	47KΩ	½	C-9B1-82	BTS-47K	Voltage Divider
R62	150KΩ	½	C-9B1-26	BTS-150K	Voltage Divider
R63	4700Ω	½	C-9B1-70	BTS-4700	Integrator
R64	4700Ω	½	C-9B1-70	BTS-4700	Integrator
R65	18KΩ	1	C-9B2-77	BTA-18K	Vert. MV Plate
R66	4.7 Meg.	½	C-9B1-35	BTS-4.7 Meg.	Vert. MV Plate
R67	330KΩ	½	C-9B1-92	BTS-330K	Vert. MV Grid
R68	1000Ω	½	C-9B1-159	BTS-1000-5%	Vert. MV Cathode 5%
R69	6.8 Meg.	½		BTS-6.8 Meg.	Feedback
R70	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Vert. Output Grid 20%
R71	5.6 Meg.	½	C-9B1-249	BTS-5.6Meg-5%	Vert. Output Plate 5%
R72	5.6 Meg.	½	C-9B1-249	BTS-5.6Meg-5%	Vert. Output Plate 5%
R73	10 Meg.	½	C-9B1-37	BTS-10 Meg.	Vert. Output Grid
R74	68KΩ	½	C-9B1-84	BTS-68K	Vert. Output Cathode
R75	560Ω	½	C-9B1-59	BTS-560	Differentiator
R76	18KΩ	½	C-9B1-77	BTS-18K	Horiz. MV Grid
R77	8200Ω	½	C-9B1-73	BTS-8200	Horiz. MV Plate
R78	47KΩ	½	C-9B1-82	BTS-47K	Horiz. MV Plate
R79	100KΩ	½	C-9B1-86	BTS-100K	Horiz. MV Grid
R80	12000Ω	½	C-9B1-161	BTS-1200-5%	Horiz. MV Cathode 5%
R81	220KΩ	½	C-9B1-27	BTS-220K	Isolation
R82	2.2 Meg.	½	C-9B1-108	BTS-2.2 Meg	Horiz. Output Grid
R83	62Ω	1	C-9B2-130	BW-½-62	Horiz. Output Cathode
R84	2.2 Meg.	½	C-9B1-108	BTS-2.2 Meg	Feedback
R85	15KΩ	½	C-9B1-76	BTS-15K	H V Osc. Grid
R86	2700Ω	1	C-9B2-66	BTA-2700	H V Osc. Screen
R87	220KΩ	½	C-9B1-27	BTS-220K	Isolation
R88	100KΩ	1	C-9B2-25		H V Filter
R89	100KΩ	½	C-9B1-25		H V Filament
R90	1 Meg.	½	C-9B1-31	BTS-1 Meg.	Isolation
R91	4.7 Meg.	½	C-9B1-35		Vert. Deflection Load
R92	4.7 Meg.	½	C-9B1-35		Vert. Deflection Load
R93	4.7 Meg.	½	C-9B1-35		Horiz. Deflection Load
R94	4.7 Meg.	½	C-9B1-35		Horiz. Deflection Load
R95	2.2 Meg.	½	C-9B1-102		Voltage Divider
R96	2.2 Meg.	½	C-9B1-102		Voltage Divider
R97	2.2 Meg.	½	C-9B1-102		Voltage Divider
R98	2.2 Meg.	½	C-9B1-102		Voltage Divider
R99	2.2 Meg.	1	C-9B2-239		Voltage Divider 5%
R100	2.2 Meg.	1	C-9B2-239		Voltage Divider 5%
R101	2.2 Meg.	1	C-9B2-239		Voltage Divider 5%
R102	2.2 Meg.	1	C-9B2-239		Voltage Divider 5%
R103	1.5 Meg.	1	C-9B2-235		Voltage Divider 5%
R104	10 Meg.	½	C-9B1-37		Voltage Divider 5%
R105	10 Meg.	½	C-9B1-37		Voltage Divider 20%
R106	150Ω	1	C-9B2-8	BW-2-150	Voltage Divider 20%
R107A	47Ω	2	C-9B4-6	BW-2-47	Filter
B	62Ω	1	C-9B2-130	BW-1-62	Filament String
					Filament String See Note 2

Note 1 - Not Used On All Models.
Note 2 - Used On Chassis 16DX21A Only.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T1	270Ω Tap @ 160Ω & 110Ω		B-12M-15662				Hor. Deflection Transformer.

TRANSFORMER (H.V. OSC.)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
T2	30	SEC. 1 2.5Ω SEC. 2 62Ω	B-20-15557				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: TRUTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
T3	21002	3.52	1922	.72	B-12C-10074-4	A-3876	RO-2	A-2528	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATING		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.5Ω	B-18A-15618	ST-113† MOD.P4-X	4A07†	† Trim flange and mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	3 7/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	TRUETONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.185A	63Ω	2.6Henries	C-16A15624	C-2325	TR-4225	C-2991‡	‡ Drill one new mounting hole.

COILS (RF-IF)

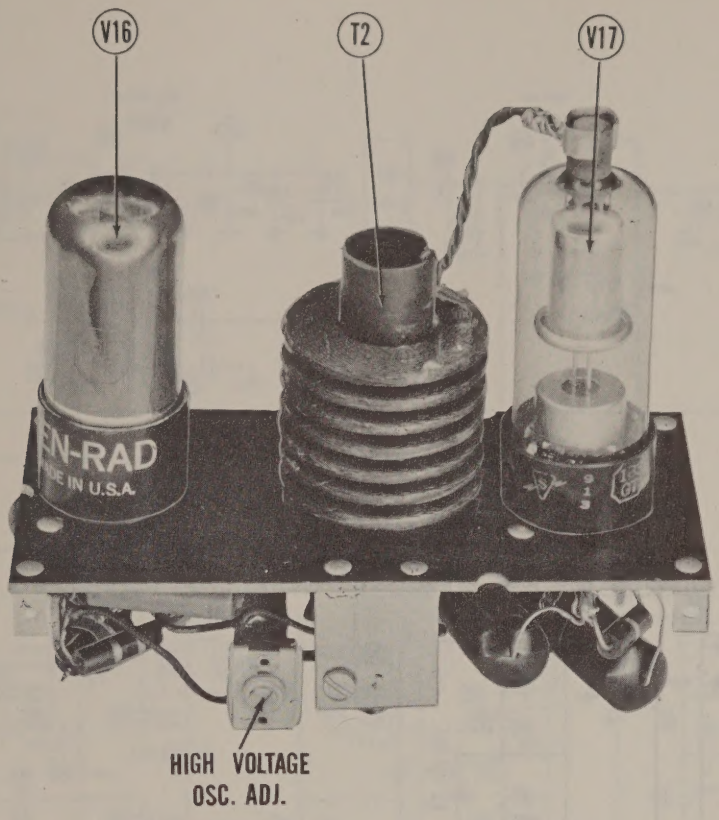
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω		A-201-15676		
L3	High Band Antenna	0Ω				Consists of No. 18 straight, bare, tinned copper wire.
L4	Low Band Antenna	0Ω				Consists of No. 18 straight, bare, tinned copper wire.
L5	RF Choke	.2Ω		A-16A-16637		
L6	RF Choke	.2Ω		A-16A-16637		
L7	Low Band RF	0Ω		B-13E-12046		
L8A	High Band RF	0Ω		A-201-15675		Uses core with green end.
B	High Band RF	0Ω		B-13D-12155		Uses core with red end.
L9	Low Band RF	0Ω		B-13E-12046		
L10A	High Band RF	0Ω		A-201-15675		Uses core with green end.
B	High Band RF	0Ω		B-13D-12155		Uses core with red end.
L11	RF Choke	.2Ω		A-16A-16637		
L12	Low Band Osc.	0Ω		B-13D-12155		
L13	High Band Osc.	0Ω		A-13D-12045		
L14	RF Choke	.2Ω		A-16A-16637		
L15	RF Choke	.2Ω		A-16A-16637		
L16	1st IF	.1Ω		B-201-15612		
L17	2nd IF	.1Ω		B-201-15612		
L18	3rd IF	.1Ω		B-201-15612		
L19	4th IF	.1Ω		B-201-15945		
L20	RF Choke	1.5Ω		A-16A-16637		
L21	RF Choke	1.5Ω		A-16A-16637		
L22	RF Choke	1.5Ω		A-201-15608		
L23	RF Choke	1.5Ω		A-16A-16637		
L24	RF Choke	1.5Ω		A-16A-16637		
L25	Peaking	7.2Ω		A-201-16170		
L26	Peaking	22Ω		A-201-16172		
L27	Peaking	9Ω		A-201-16171		
L28	Sound Take-Off Trans.	.5Ω	.5Ω	C-201-16155		
L29	Ratio Det. Trans.	4Ω	.5Ω	C-201-15717		
L30	RF Choke	24.5Ω		A-201-15556		
L31	RF Choke	20Ω		B-16A-13524		
L32	Fil. Choke	1.5Ω		A-16A-16637		
L33	Fil. Choke	1.5Ω		A-16A-16637		
L34	RF Choke	0Ω		A-201-16379		

SELENIUM RECTIFIER

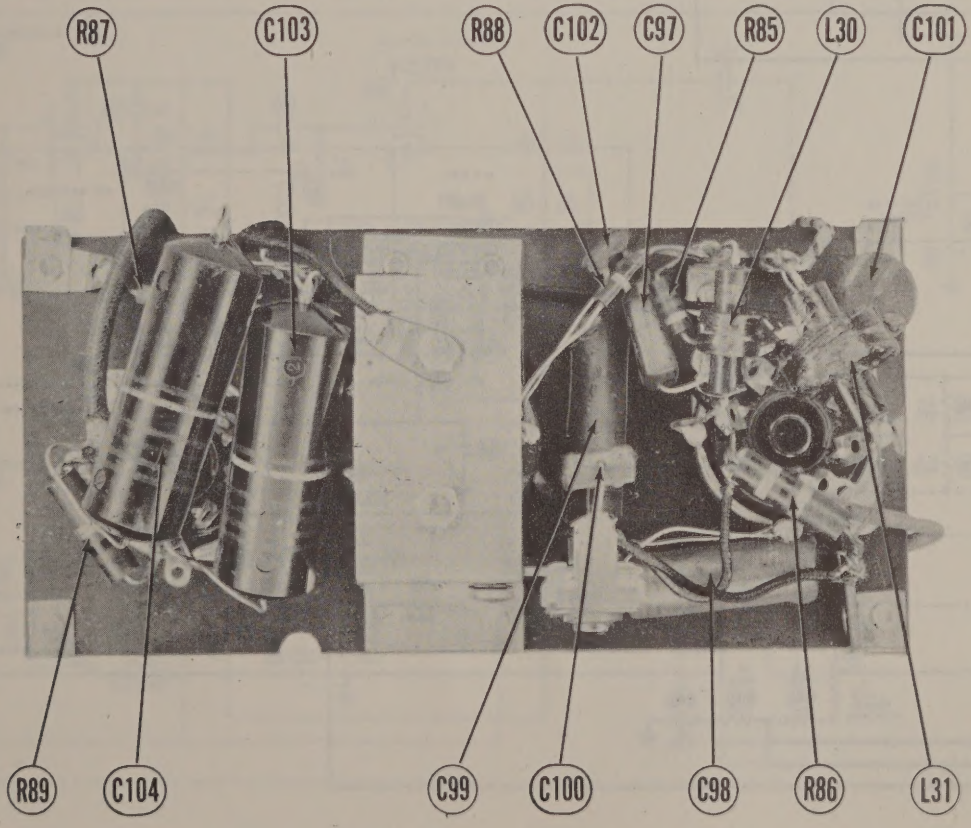
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	TRUETONE PART No.			
M1	.105A	B-21J-15661			
M2	.105A	B-21J-15661			

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Ballast Tube	B-9M-15822	
	Iron Core	A-51A-16693	For L19
	Knob	B-5B-15759-57	For station selector
	Knob	B-5B-15782-57	For contrast, Hor. Hold, Vert. Hold and on-off vol.
	Safety Glass	C-30M-15905	
	Iron Core	A-51A-15713	For L12 and L13
	Iron Core	A-51A-15714	For L8 and L10 having green end.
	Iron Core	A-51A-16391	For L8 and L10 having red end.
	Iron Core	A-51A-15715	For L7 and L9
	Core Mounting Clip	A-2M-16276	



HIGH VOLTAGE SUPPLY - TOP VIEW



HIGH VOLTAGE SUPPLY - BOTTOM VIEW

PHOTOFACT* Folder

*TRADE MARK

TRUETONE
MODEL D2985

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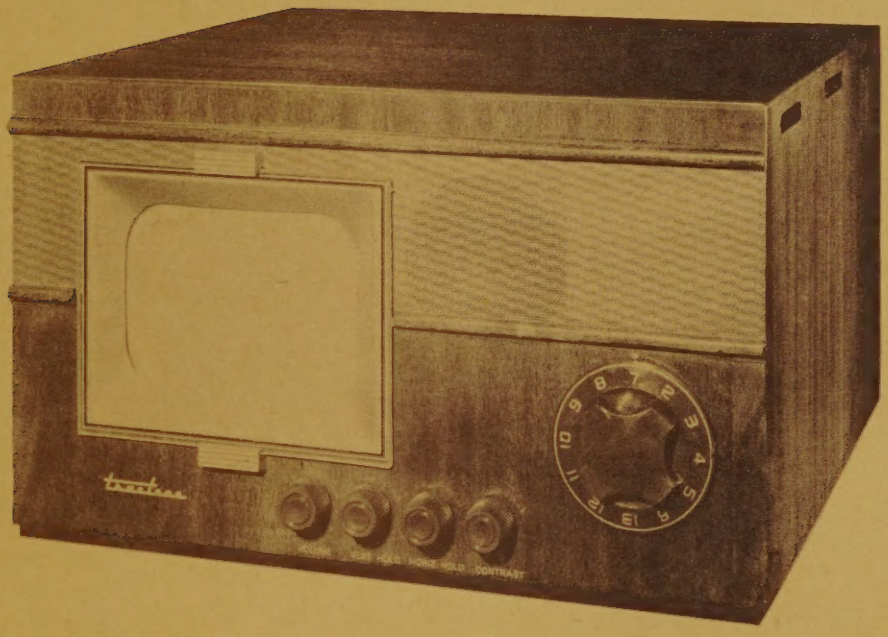

MODEL D2985

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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